WEST

Help | Logout | Interrupt

Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences

Search Results -

Terms	Documents
l7 and sub-menu	4

Database: US Patents Full-Text Database
JPO Abstracts Database
EPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Refine Search: `l7 and sub-menu` Clear

Search History

Today's Date: 2/7/2001

DB Name	Query	Hit Count	Set Name
USPT	l7 and sub-menu	4	L8
USPT	l3 and menu	65	L7
USPT	6002394.pn.	1	L6
USPT	l4 and sub-categories	8	L5
USPT	l3 and categories	63	L4
USPT	l2 and search	88	L3
USPT	l1 and program listing or tv listing	179	L2
USPT	electronic guide or tv guide or program guide or epg	1023	L1

TV listings databases and the multimedia interface for el programme guides (EPGs)

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Abstract:
While the further explosion of channels on the digital multi-media horizon, how broadcasters be able to cope with the increased demand, from traditional and n electronic publishers, for detailed scheduling information about their programm paper offers comments on the realities of data collection in a world moving eve towards 'electronic programme guides' (EPGs) and hence the need for real-tim capture, management and distribution. The comments are intended to make cl of the practical issues of TV listings distribution. Infomedia S.A. is an on-line in service company that collects, processes and provides Europe's most comprehe electronic TV listings data source.

Index Terms:
TV listings databases; data management; data distribution; TV broadcasting; m interface; electronic programme guides; electronic publishers; scheduling infor data collection; real-time data capture; TV listings distribution; Infomedia; on- information service company; electronic TV listings data source; information se television broadcasting

TV LISTINGS DATABASES AND THE MULTIMEDIA INTERFACE FOR ELECTRONIC PROGRAMME GUIDES (EPGs)

J Greco

Infomedia S.A., Luxembourg

With the further explosion of channels on the digital multi-media horizon, how will broadcasters be able to cope with the increased demand, from traditional and new electronic publishers, for detailed scheduling information about their programmes? This paper offers comments on the realities of data collection in a world moving ever faster towards "electronic programme guides" (EPGs) and hence the need for real-time data capture, management and distribution.

The comments are put forward by the founder and managing director of Infomedia, in non-technical language which is intended to make clear some of the practical issues of TV listings distribution that we hope broadcasting technology managers will note. An apology is offered right away in case the points raised have already been addressed by the technologies chosen to run today's TV stations. It is only that it is not apparent from our direct experiences of collecting advance TV programme transmission data from the large number of European channels that we work with.

Infomedia S.A. is an on-line information service company that collects, processes and provides Europe's most comprehensive electronic TV listings data source. Based in Luxembourg, Infomedia offers complete programme schedule data for 150+ European TV channels. This data is made electronically accessible to the company's clients, mostly print and electronic publishers, in 20 European countries.

Programming is at the core of the broadcasting business and the TV listings and tracking service Infomedia provides is interesting to a cross section of the world-wide media industry. Infomedia TV data can be packaged, analysed and delivered in many ways to meet a wide range of industry needs, from publishers of printed and electronic TV programme guides, to broadcasters wishing to monitor the activities of their competitors, and the copyright societies who want to accurately track broadcast rights usage.

Data collection is the heart of our business, and our approach in setting up links with the channels, our "information providers", has been unique. Infomedia struggled initially to fulfill its objective of obtaining data "in electronic form" from the channels. Our primary contacts are with the press offices, traditionally the department responsible for putting together the paper programme schedule that is sent out to the press, and which is also used for marketing purposes.

Until quite recently, TV companies have only distributed their listings in paper form, normally as a printed booklet supplemented by faxes advising of programme changes. The main disadvantages of this method, identified and addressed by Infomedia, were:

- that printed schedules were out of date by the time they reached journalists' desks, due to the constantly changing nature of programming in competitive broadcasting environments.
- that publishers needed to chase TV companies who were late or which forgot to send them the schedules and changes, meaning that every TV company's press

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office would be fielding calls from the press for the same information

- that TV company press officers could be more productively re-deployed towards the role of programme promotion and away from data distribution.
- that publishers would greatly welcome the opportunity of accessing a one-stop-shop for the collection of all TV data relevant to their needs, in a standardised *electronic* format that could be easily adapted to their internal computerised page-make-up or other systems' needs.
- that a single electronic source, accessible by publishers at their convenience, 24 hours a day, would ease workloads for both TV companies and the press.
- that the electronic nature of a centralised service would facilitate procedures for constant updating of the schedules up to the last minute of broadcast, thereby ensuring an accurate record of European broadcast data.

Today, Infomedia receives more than 80% of the TV programme schedules it collects in electronic form - and has prospered from its ability to extract a standard out of the chaos of data formats it receives - files mostly derived from software used to create the printed and mailed version. This means anything and everything from Word to Quark to Pagemaker and Excel (yes, Excel!) files. Often, the choice of software is made according to the familiarity of the employee with a specific package that they've grown used to. The content presentation, too, details such as the director's name, the country of origin, the original language title, differs dramatically from channel to channel.

This makes us wonder, of course, what is happening inside the TV companies with regard to the use of technology. We continually read of the huge investments being made by broadcasters for their sophisticated scheduling systems, and the multi-million dollar "media servers" that will automatically fulfill all the multi-media management needs of the company.

We know well from reading the trade press that millions are being spent on digital servers capable of transmitting megabytes and megabytes of data. But we also suspect that internally, throughout the broadcasting organisation, the roll-out of information technology resources, and training, is just not happening. At least - we don't see evidence of it from the majority of channels we work with.

So, why aren't the people in the press offices connected up to the main servers, why aren't they aware of how they could access and more easily manipulate the data? Why is so much money and effort being spent by individual TV companies on the job of paper data dissemination disguised as marketing to end users who ultimately need a standardised, customised, electronic format?

With the development and implementation of digital broadcasting, the future holds even more channels in store. A huge corresponding investment is being put into these developments (pay-per-view, near video-on-demand, the increase of thematic channels, interactive services, etc), by the channels. There will be a corresponding leap in the amount of associated data that will have to be collected and processed by any publisher wishing to provide a full information service, including listings data, to consumers. And a real-time updating solution has yet to be found - such as will be required for the new viewer navigation tools - "electronic programme guides".

Infomedia's ability to keep up with the processing workload has put the company in a unique position. It is the only company operating on an international level, centralising data electronically, and using innovative processes to capture and format the listings data. Yet when digital really takes off - there will be a huge increase in the number of channels that need to be tracked.

We'd like to invite technical directors to take note of this pending external need for real-time transmission data dissemination. We'd also like to see signs of information technology resources being integrated in a way that is useful to staff members within their organisations. If you take for example the workflow on the production of a printed TV listings guide for any channel, we first have to consider that this information emanates from the acquisitions and scheduling department.

Surely these highly sophisticated systems provide the possibility to manage all the related data, provided the input is done correctly once, so that the output of data can be designed to fit a multitude of needs?

Our suggestions:

- the channel should be able to provide the data in "electronic form" - the content must be delivered in database format, structured as delimited data fields
- the channel could provide a reliable, constant data supply, including updates, at mutually agreed times.
- the transmission of all the above data should be done electronically, by modem

After Infomedia first came onto the market in 1991 with its proposal to electronically disseminate broadcast listings, some channels decided that they would set up their own electronic dissemination systems. The ones that have been set up range from bulletin boards to electronic mail services, and more recently, the World Wide Web (WWW) hosts a number of broadcasters' home pages.

This evolution presents an excellent justification of our concept. With each of these systems, the information is presented in different electronic formats, and so standardisation of the data is not easy at all for commercial users. Further, it creates a bigger problem for such users than the paper distribution method did. Now, instead of waiting for the postman to arrive with several envelopes of paper schedules, the recipient now has to log-in to many different e-mail or bulletin board systems. You could also ask: how does WWW data really benefit the consumer if what he really seeks is a navigational tool ?

Infomedia's business concept has from the beginning focused primarily on the information flow between broadcasters and publishers. The company's intention has been to improve the flow, using new technology, and make the entire dissemination process efficient and economical.

As Europe's clearing house for TV listings data, we want to work even more efficiently with the channels than we do today. Infomedia is already creating mandatory and extended DVB "service information" feeds for a couple of the new EPGs. There are real challenges ahead, especially in organising a real-time, constantly updated scheduling data feed. So if there are any technical people out there who've got some comments, because their systems can already be integrated to improve the data flow in the way we've mentioned, let us hear from you!

Interactive electronic programme guides

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16 Jan. 1998
1998
Number of Pages: 36
References Cited: 0
INSPEC Accession Number: 5883941

Abstract:
There are firm plans for introduction of satellite and terrestrial digital TV servic UK, mainly because the audio and video coding used makes it possible to trans more channels via a given spectral slot than using analogue techniques. Capac be used in a flexible manner for other data and multimedia services. The broad recognise the benefits of providing electronic programme guides (EPGs) with in about their current and future programmes in order to differentiate them from competitors. In the near term, the range of interactive services will be limited b capabilities of the modem in the set top box and the network it is connected to. early boxes may only include a low rate PSTN modem. However, it is generally that (a) high rate PSTN or ISDN modems will steadily become accepted becaus allow access to the Internet and (b) at some time in the future these will be rep a broadband connection probably based on asymmetric digital subscriber loop This paper discusses the ways in which the capabilities of these different intera channel options could be used to enhance and extend a basic broadcast EPG so consumers can access all the information they need to decide what to watch an record.

Index Terms:
interactive television; interactive electronic programme guides; satellite digital services; terrestrial digital TV services; UK; video coding; audio coding; channe interactive services; set top box; low rate PSTN modem; high rate PSTN modem modems; broadband connection; asymmetric digital subscriber loop; ADSL

INTERACTIVE ELECTRONIC PROGRAMME GUIDES

W Dobbie, BT Laboratories

1. Introduction

There are firm plans for introduction of satellite and terrestrial digital TV services in the UK, mainly because the audio and video coding used makes it possible to transmit many more channels via a given spectral slot than using analogue techniques. Capacity can also be used in a flexible manner for other data and multimedia services. The broadcasters recognise the benefits of providing electronic programme guides (EPG's) with information about their current and future programmes in order to differentiate them from those of competitors.

The set top boxes required for the new digital broadcast services will be expensive initially making it important to maximise the range of services which they provide and their perceived value. It is therefore intended to include functionality enabling the introduction of interactive services which will either complement the broadcast offering or stand-alone, further increasing consumer choice.

The vast number of channels and delivery options is likely to create demand for independent EPG's covering all of the channels which the customer is authorised to receive, personalising the available information associated with them and presenting it in a way which he/she finds attractive. The interactive channel can be used to achieve this by supplementing the information which is available via the broadcast channels under the customers control.

In the near term, the range of interactive services will be limited by the capabilities of the modem in the set top box and the network it is connected to. Some early boxes may only include a low rate PSTN modem. However, it is generally accepted that a) high rate PSTN or ISDN modems will steadily become accepted because they allow access to the Internet and b) at some time in the future these will be replaced with a broadband connection probably based on asymmetric digital subscriber loop (ADSL). This paper discusses the ways in which the capabilities of these different interaction channel options could be used to enhance and extend a basic broadcast EPG so that consumers can access all the information they need to decide what to watch and/or record.

2. Digital TV Introduction Scenarios

Satellite - BSkyB plans to introduce a 200 channel pay TV package targeted at the UK by mid 1998. This will include all of their current analogue TV channels plus many new niche channels and near video-on-demand (NVOD) for the most popular movies. The BIB consortium which consists of BSkyB, BT, the Midland Bank and Matsushita plans to add interactive services shortly afterwards using a combination of broadcast and on-line material. A subsidy will be provided to reduce the cost of the digital set top boxes (which will include a 28.8Kbit/s V34 PSTN modem) to an acceptable level.

It is expected that BIB will provide one or more broadcast carousel(s) with text, graphics, still pictures and high quality audio which will be used to complement interactive services based on text, graphics, ¼ size still pictures and low bit rate audio delivered on-demand via the high rate PSTN modem. In principle the BSkyB EPG (covering all their satellite services) could exploit the full capabilities of this interaction channel in the ways discussed in section 5.

Terrestrial - The UK Digital terrestrial TV services are planned to start by the end of 1998. The required set top box is inherently more expensive than an equivalent satellite box because the modulation and coding is more

complex and because it includes an interface allowing incorporation of a conditional access (CA) control module (or more than one) for pay TV instead of an integral CA module. On the other hand, consumers will be able to use their existing TV antennas. The terrestrial offering will consist of 10 to 12 'free to air' (license or advertising funded) channels provided by the BBC, ITV, Channel 4 and 5 plus 18 to 20 pay TV channels. The BDB consortium of Granada TV and Carlton TV are expected to provide the pay TV services. They are likely to provide set top box subsidies but as yet have no plans to compete with BIB over interactive TV. Thus, even though the addition of interactivity is more desirable for terrestrial than for satellite because the available capacity is more limited, the early set top boxes are likely to have a low rate PSTN modem only, to reduce costs. The Digital Terrestrial TV Receiver Specification which was recently issued by the DMUX group only requires a minimum of 2.4Kbit/s.

The capacity available for terrestrial TV broadcasting is more limited than for satellite. Nevertheless it is likely that some of it will be used to broadcast text, still pictures, audio and possibly ¼ size moving pictures providing a multimedia version of the current broadcast Teletext services. MHEG5 is to be used to implement a simple multimedia content decoder. This capability will also be used to provide information to accompany current programmes e.g. a recipe during a cookery programme or information on competitors in a sporting event. The TV services and these Teletext plus ancillary services, which will include EPG's as discussed below, will offer the option of using the interactive channel for transactions, registering interest in a product (perhaps following an advert), requesting access to a service (possibly pay per view), ordering an item, voting in a game or talent show or to request information.

3. Broadcast EPG's

Terrestrial - It is currently planned to implement a navigator in digital terrestrial set top boxes. This will decode the DVB Service Information (SI) data which will be inserted in the MPEG 2 transport stream to accompany each broadcast service and use it to enable acquisition and tuning of the channels requested by the customer. The SI stream will also include basic information on the current and future programmes within each channel which will be used to provide simple text (and possibly graphics) based EPG's extending the navigator, as described in other papers to be presented at this colloquium.

Ideally, the text produced by these simple EPG's will be displayed in a window covering only part of the screen or overlaid transparently onto the TV picture so that it could be requested and used without disturbing an ongoing programme too much.

Broadcasters and Teletext providers will be able to provide enhanced EPG's by adding extra information to that in the basic SI tables and using the multimedia capabilities described above to make the services attractive. The extra data should include all the information needed to describe the programmes fully including the title, a summary of the content (if not well known), its categorisation (news, sport etc.), year when it was made (especially for movies), parental rating, whether it is a repeat and many others details.

The European Digital Video Broadcasting (DVB) project is investigating the specification of a common data format so that broadcasters can provide the required data for their programme schedules knowing that others will have a mechanism to do the same. If such a format is defined and adopted by all broadcasters it will in theory mean that data on each channel will only have to be transmitted once. An intelligent set top box could then build up a complete set of information by polling round all the digital multiplexes and extracting the SI and EPG information which it is authorised to receive.

There are many practical problems with this approach which needs a considerable amount of local memory and ideally, a second receiver. Even if boxes are eventually able to do this it is still necessary to transmit the required data relatively frequently to allow for cases where boxes have been powered down. This means that the amount of information which can be provided will have to be restricted, preventing the inclusion of high bit rate content such as still pictures in most cases.

Satellite - In the satellite case capacity is available to allow much more information to be provided and still pictures could be included. Even so it is unlikely that moving pictures could be used except for major attractions such as popular movies. So called barker channels are sometimes used and these can be useful in allowing customers to see a sample from the available movies before making a choice. The problem here is that these linear channels often present the customer with irrelevant information. Provision of multiple simultaneous thematic barker channels aimed at children, families, Sports, Sci Fi fans etc. would help and this option could be practical, especially if the video content is presented in a ¼ screen window. The ¼ screen mode would also allow the rest of the screen to be used for text, graphics or still pictures delivered on-demand via the interaction channel.

Satellite delivery therefore has an inherent advantage over terrestrial in that it will be possible to promote the programmes much more effectively. Given that the number of channels will be greater and that NVOD will also be offered it is likely that many consumers who subscribe to pay TV in addition to the free-to-air terrestrial channels will take satellite rather than terrestrial pay TV. BDB are likely to compete actively on all levels and they will wish to exploit all the available ways of promoting their offering. They should therefore seriously consider using interactivity in association with their EPG.

It is unlikely that the EPG's and application programming interfaces (API's) required to run them will be fully harmonised for satellite and terrestrial because the pay TV offerings will be in direct competition. The BSkyB system is based on the Thomson/Sun Open TV proprietary system. This means that even dual mode boxes for satellite and terrestrial may not be able to provide a single unified EPG based on broadcast information only other than perhaps a simple one based on terrestrial TV Teletext or a satellite based EPG including free-to-air terrestrial. They will, however, include a high rate PSTN modem making an interactive EPG practical.

4. Addition of a Low Rate PSTN Modem

If a 2.4Kbit/s PSTN modem is fitted in digital terrestrial TV set top boxes the capability for on-demand text and simple graphics provided will allow enhanced EPG services to be delivered to the customers TV. This could be used for instance for a detailed review of a programme, background on the artists or athletes, or a summary of the story so far or the last episode. The customer could even choose between a number of reviews depending on his preference. There would be no limit on the amount of information which could be provided other than the cost of generating and storing it which would be traded against the degree of interest/use. Customers would clearly have to consider the information worth paying for and this would set the limit.

Alternatively, a customer could request a recommended viewing list either starting soon, for the whole evening or even to record while he is on holiday. The set top box could store his personal profile and that of the other family members. A single profile or a combination of those for the people present would be sent to the server. The amount of information stored on the server and used in the decision process would be much greater than for any broadcast EPG so all of the possible categories which an individual customer could fit into could be covered e.g. sex, age, race, religion, programme preferences etc.. This means that a more accurate selection would result in most cases. Where there is combination of several profiles one important function would be to filter out material which is not suitable.

If the server was supplied with information on what had been watched by the box (this could be stored locally and then downloaded during an interaction) it would be able to tailor the choice even more accurately. This technique could actually be used to build up profiles for consumers. It would, however, be less useful for families than for those living or viewing alone.

These services could be useful enhancements to a broadcast EPG, as they could cover both of the possible delivery options and related or stand-alone interactive services. Nevertheless, a presentation based on text and simple graphics may be thought of as only slightly better than current Teletext. This impression would be supported by the fact that delivery of information on-demand would be delayed by several seconds due to the modem set up procedure.

5. Addition of a High Rate PSTN Modem

If a 28.8 Kbit/s modem is added in the set top box it becomes possible to deliver sophisticated graphics, still pictures and low bit rate audio as well as text on-demand. This adds an important extra dimension in that pictures (even stills) and the spoken word can be much more informative and effective in attracting interest than text. This combination makes it feasible to deliver a multimedia presentation to the customer in response to his request instead of just a long string of text. This could include stills from the programme showing the main characters or from particularly exciting/interesting scenes.

In this case the response to a request for personalised recommended viewing advice could consist of a mosaic of numbered pictures from the selected programmes. The customer could then click on one number to select the required channel or preface the number with another key to request more information.

Even with a high rate PSTN modems it would take around 15 seconds to deliver a ¼ size still picture to the TV. It is therefore still very attractive to maintain contact with broadcast material to provide interest during delivery of information on-demand. In the satellite case this could be achieved by using part of the screen area to display a barker channel with suitable interesting material. For terrestrial, it might be acceptable to use a suitable extract from the broadcast EPG, ideally including some movement. Even allowing for the restricted capacity it should be possible to provide a series of icons representing the channels or a moving logo. Additionally, it would be desirable to display some form of progress indicator to give customers confidence that the information is being transmitted.

Internet on TV - Internet services for use on TV sets are being introduced by Web TV and others and the performance with a 28.8Kbit/s modem has been shown to be adequate for many customers. It seems likely that access to the vast amount of information and entertainment services which already exist on the World Wide Web will prove attractive to some customers. It is therefore likely that a suitable modem and browser will be added to broadcast set top boxes, initially as an option but in time possibly as a standard feature. This option may be attractive as an upgrade path for terrestrial TV as it would allow content to be created for both PC's and TV's using HTML which is becoming accepted as the standard for multimedia content creation. Broadcasters such as the BBC are already using the Internet to provide EPG related supplementary programme information.

6. Addition of ISDN

If an ISDN connection was added via either an internal or external terminal adapter this would significantly increase the available bit rate for interactive services. If one of the B channels was in use for a telephone call the data rate would be 64Kbit/s but at most times the rate would be 128Kbit/s. The higher data rate and lower set-up time would significantly reduce the delay for delivery of still pictures on-demand, reducing the need to mask the delay with broadcast material. It would also make it practical to deliver moving pictures in small windows which would add extra impact to the multimedia presentation of reviews on programmes described above.

7. Addition of ADSL via ATM Interface

BT and other telco's are interested in upgrading their networks to broadband. ADSL techniques will be used initially to exploit the existing copper link from the exchange to the home but later, higher rate VDSL systems will be used with fibre to the street cabinets. ADSL technology can provide 2Mbit's to most of the customers in the UK and up to 6Mbit/s to customers close to an exchange. VDSL can provide even higher rates to all of the customers served by a cabinet (in most cases). It is expected that the data carried by the DSL links will be decoded in an active Network Terminating Unit (NT) and then fed via cat 5 wiring to an ATM based interface in the set top box.

The main benefit of DSL (and to a lesser extent ISDN) is the ability to deliver multiple simultaneous services to one or more terminals in the home while avoiding contention with normal telephone usage, a problem which is becoming recognised through the use of Internet on home PCs. In the near term this capability is likely to be attractive to small businesses or people working at home for remote LAN access and related services. DSL is, however, also likely to attract some of the residential customers requiring fast Internet on their PC's or TV's and this could steadily generate demand for other services.

In the future, when UK regulations allow, DSL will enable delivery of switched broadcast TV derived from any source. In the near term it could be used for the following:

a) VOD including news, information, education etc. as well as movies
b) Special interest channels and newsletters etc. not cost effective to broadcast
c) On-demand delivery of broadcast material which a customers has missed
d) Enhanced versions of interactive services complementing broadcast TV

Considering interactive EPG's, all of the services described in sections 3 to 6 could be significantly enhanced by reducing the delay and adding full motion video content.

One clear extra application is the delivery of short trailers on-demand. This capability would make it possible to promote the attractions of a programme in a far more effective manner than with any broadcast barker channel. This facility could be associated with broadcast material but it would be especially attractive for VOD where there would be 1,000's of movie and TV titles to choose from.

If there is nothing interesting on any of the broadcast channels which he has access to (believe it or not this will still be possible) the customer could search for something meeting his requirements, either using his normal profile or varying it. This is directly comparable with pulling out a video which you recorded at some earlier time. On receipt of a listing (or a moving mosaic presentation) he could view a summary and then decide whether to view the movie or review another.

Alternatively, the customer may be offered a game or other on-line service and he would be able to have the rules and challenges explained to him so that he can make a choice.

8. Conclusions

Electronic programme guides are likely to be a major factor in the success of any new entertainment service aimed at TV users. This makes it important to exploit all of the capabilities which are practical. Network interactivity is likely to be added to digital TV set top boxes for other broadcast related and stand-alone services but it is also very attractive for the enhancement of broadcast EPG's. It can significantly increase the amount of information which a customer can access, tailoring the EPG to his personal requirements more effectively.

The need to compete with satellite pay TV makes it desirable for digital terrestrial TV set top boxes to include a high rate PSTN modem as soon as possible. Consumers will not be impressed with the predominantly text based EPG services which would be possible with broadcast plus a low rate modem and they will therefore be of limited value in promoting services. The attraction of providing access to the World Wide Web may also help to convince customers to pay for the boxes and take up the services which they enable.

The addition of VOD services will significantly add to the capabilities of set top boxes, further increasing the attraction to consumers. The provision of EPG's with full motion video content will significantly increase the service providers ability to promote broadcast and on-line services. Broadcasters and manufacturers should therefore seriously consider including the necessary interfaces and processing/memory in boxes to provide an upgrade path to broadband in the future.

```
SYSTEM:OS  - DIALOG OneSearch
  File 275:Gale Group Computer DB(TM)  1983-2001/Feb 02
         (c) 2001 The Gale Group
  File 674:Computer News Fulltext  1989-2000/Jan W4
         (c) 2001 IDG Communications
  File 647:CMP  Computer Fulltext  1988-2001/Feb W1
         (c) 2001 CMP

      Set  Items  Description
      ---  -----  -----------
?s ((program or electronic or tv) (w) guide?) (15n) search?
          309584  PROGRAM
          215848  ELECTRONIC
           40913  TV
           86147  GUIDE?
           87430  SEARCH?
      S1      34  ((PROGRAM OR ELECTRONIC OR TV) (W) GUIDE?) (15N) SEARCH?
?t 1/ti,py/1-34

 1/TI,PY/1     (Item 1 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

TV as You Like It: New Tricks for the Old Box.(Technology Information)
2001


 1/TI,PY/2     (Item 2 from file: 275)
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CURRENT PLATFORMS.(Company Business and Marketing)
2000


 1/TI,PY/3     (Item 3 from file: 275)
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ONLINE LEARNING IN OFFLINE HOURS.(Internet/Web/Online Service Information)
2000


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ITV to Boom, Firm Says.(Industry Trend or Event)
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 1/TI,PY/5     (Item 5 from file: 275)
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Mobile Office and E-Mail.(News Briefs)
2000


 1/TI,PY/6     (Item 6 from file: 275)
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Easy Backup, but Difficult Digital Video.(Hardware Review)(Evaluation)
2000

1/TI,PY/7 (Item 7 from file: 275)
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America Online Introduces the Next Generation of Its Official Website, AOL.COM.(Company Business and Marketing)
2000

1/TI,PY/8 (Item 8 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Skiing Anyone? 11/24/99 >BY Steve Gold.
1999

1/TI,PY/9 (Item 9 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Matsushita To Launch Consumer Devices With Hard Disks In '99 03/09/99.
1999

1/TI,PY/10 (Item 10 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

A Tool for Every Task.(Web site directory)(Directory)
1998

1/TI,PY/11 (Item 11 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

EXPRESS BY INFOSEEK DESKTOP SEARCH ENGINE.
1998

1/TI,PY/12 (Item 12 from file: 275)
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RCA/Thompson Rolls Out First NC For Consumers.
1997

1/TI,PY/13 (Item 13 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Internet Update 03/05/97:Singapore And Australia Internet Indicies.
1997

1/TI,PY/14 (Item 14 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Top 100 Web sites. (guide to best of the World Wide Web)(Directory)
1997

1/TI,PY/15 (Item 15 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Home is where the PC is: computers for entertainment and computing. (comparison of HP Pavilion 7295V, IBM Aptiva S74, Sony PCV-90 and the Toshiba Infinia 7200) (includes related articles on home PCs and the Editors' Choice) (First Looks) (Hardware Review)(Evaluation)
1996

1/TI,PY/16 (Item 16 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Links For The Info Traveller.
1996

1/TI,PY/17 (Item 17 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Beyond books. (impact of computerization on libraries) (includes related article on San Francisco Public Library, librarian training)(California Edition) (Technology Information)
1996

1/TI,PY/18 (Item 18 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Nexpo '96, II: editorial and advertising systems and electronic publishing. (includes related article on Freedom System Integrators' addition of Phrasea to its product line) (Industry Trend or Event)
1996

1/TI,PY/19 (Item 19 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Internet Update.
1996

1/TI,PY/20 (Item 20 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Gateway and the big picture. (Gateway's Destination Pentium-based system) (Product Development)
1996

1/TI,PY/21 (Item 21 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Hey, it's my job to watch TV. (Microsoft tests interactive television system)(Column)
1995

1/TI,PY/22 (Item 22 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Making movies: Avid's VideoShop 2.0 takes QuickTime video editing one step beyond. (Software Review) (Evaluation)
1994

1/TI,PY/23 (Item 23 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

General Instruments in deal with Microsoft, Intel. (cable television converters)
1993

1/TI,PY/24 (Item 24 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Modular Windows debuts. (Microsoft Corp.'s Windows 3.1) (Product Announcement)
1993

1/TI,PY/25 (Item 25 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Local Expert is your guidebook to cities. (Strategic Mapping Inc. introduces Local Expert electronic map database)(Brief Article) (Product Announcement)
1993

1/TI,PY/26 (Item 26 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Interactive TV arrives: ready or not, cable companies move ahead. (Sessions; Seybold Digital World '92 conference)
1992

1/TI,PY/27 (Item 27 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

An inside look at the competition: the cable companies are ready to play the information services game - and they are well-equipped and positioned to be formidable competitors. (Special Report: The Telcos In Information Services) (Cover Story)
1992

1/TI,PY/28 (Item 28 from file: 275)

DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Coming soon to a screen near you: the Electronic Frontier. (Electronic Frontier Foundation conference of electronic advertising)(thoughts on business/consumer relations and privacy issues) (includes related articles on brand marketing and a Lotus 1-2-3 ad)
1991

1/TI,PY/29 (Item 1 from file: 674)
DIALOG(R)File 674:(c) 2001 IDG Communications. All rts. reserv.

Easy Backup, but Dicult Digital Video
Publication Year: 2000

1/TI,PY/30 (Item 1 from file: 647)
DIALOG(R)File 647:(c) 2001 CMP. All rts. reserv.

AIMS Lab Video Highway Xtreme - Take Your PC to the Xtreme (New Products - Multimedia)
, 1998

1/TI,PY/31 (Item 2 from file: 647)
DIALOG(R)File 647:(c) 2001 CMP. All rts. reserv.

survey - Search Sites Sweep Up
, 1996

1/TI,PY/32 (Item 3 from file: 647)
DIALOG(R)File 647:(c) 2001 CMP. All rts. reserv.

Money Rolls Off the Presses (Financial)
, 1995

1/TI,PY/33 (Item 4 from file: 647)
DIALOG(R)File 647:(c) 2001 CMP. All rts. reserv.

Full Web Ahead: Navigating The Web Navigators (updates)
, 1995

1/TI,PY/34 (Item 5 from file: 647)
DIALOG(R)File 647:(c) 2001 CMP. All rts. reserv.

Show Biz - Get with the program. Tune to these nine networks for the scoop on your prime-time faves. (Law & Order)
, 1995

```
Last logoff:  29jan01 16:16:57
Logon file001 07feb01 10:22:16
           *** ANNOUNCEMENT ***
                    ***
NEW FILE RELEASED
***Investext PDF Index (File 745)
***Daily and Sunday Telegraph (London) Papers (File 756)
***The Mirror Group Publications (United Kingdom) (File 757)

UPDATING RESUMED
***Extel News Cards from Primark (File 501)
***TFSD Ownership Database (File 540)
                           ***
RELOADED
***Kompass Asia/Pacific (File 592)
***Kompass Central/Eastern Europe (File 593)
***Kompass Latin America (File 586)
***Brands and their Companies (File 116)
***Kompass USA (File 584)
***Kompass Canada (File 594)
***PsycINFO (File 11)
FILES REMOVED
***EconBase (File 565)
***Unlisted Drugs (File 140)

>>>Get immediate news with Dialog's First Release
   news service.  First Release updates major newswire
   databases within 15 minutes of transmission over the
   wire.  First Release provides full Dialog searchability
   and full-text features.  To search First Release files in
   OneSearch simply BEGIN FIRST for coverage from Dialog's
   broad spectrum of news wires.

     >>> Enter BEGIN HOMEBASE for Dialog Announcements <<<
     >>>    of new databases, price changes, etc.      <<<
                    ****
*** NEW Current Year Ranges Install ***

File   1:ERIC  1966-2001/Feb 02
       (c) format only 2001 The Dialog Corporation

      Set  Items  Description
      ---  -----  -----------
?begin 411
       07feb01 10:23:34 User219455 Session D706.1
            $0.23    0.065 DialUnits File1
     $0.23  Estimated cost File1
     $0.10  TYMNET
     $0.33  Estimated cost this search
     $0.33  Estimated total session cost   0.065 DialUnits

File 411:DIALINDEX(R)

DIALINDEX(R)
   (c) 2001 The Dialog Corporation plc
```

```
*** DIALINDEX search results display in an abbreviated ***
*** format unless you enter the SET DETAIL ON command. ***
?sf compsci,patents,eecomp,electron
>>>         351 is unauthorized
>>>         352 is unauthorized
>>>         353 is unauthorized
>>>3 of the specified files are not available
   You have 51 files in your file list.
   (To see banners, use SHOW FILES command)
?s "smart tv"/ti

Your SELECT statement is:
   s "smart tv"/ti

          Items   File
          -----   ----
       Examined  50 files

   No files have one or more items; file list includes 51 files.
   One or more terms were invalid in 2 files.

?s ti="smart tv"

Your SELECT statement is:
   s ti="smart tv"

          Items   File
          -----   ----
       Examined  50 files

   No files have one or more items; file list includes 51 files.
   One or more terms were invalid in all files.

?s (smart and (television or tv))/ti

Your SELECT statement is:
   s (smart and (television or tv))/ti

          Items   File
          -----   ----
              5     2: INSPEC_1969-2001/Feb W1
              2     8: Ei Compendex(R)_1970-2001/Jan W2
              1    34: SciSearch(R) Cited Ref Sci_1990-2001/Feb W1
              1    35: Dissertation Abstracts Online_1861-2000/Dec
              3    65: Inside Conferences_1993-2001/Feb W1
              1    77: Conference Papers Index_1973-2000/Nov
              2    94: JICST-EPlus_1985-2001/Jan W3
              3    99: Wilson Appl. Sci & Tech Abs_1983-2001/Dec
              2   144: Pascal_1973-2001/Feb W1
              1   238: Abs. in New Tech & Eng._1981-2001/Jan
             17   275: Gale Group Computer DB(TM)_1983-2001/Feb 02
              4   434: SciSearch(R) Cited Ref Sci_1974-1989/Dec
              2   647: CMP  Computer Fulltext_1988-2001/Feb W1
             19   696: DIALOG Telecom. Newsletters_1995-2001/Feb 06
              6   340: CLAIMS(R)/US PATENT_1950-01/JAN 30
             24   342: Derwent Patents Citation Indx_1978-00/200105
```

```
            10   345: Inpadoc/Fam.& Legal Stat_1968-2000/UD=200104
             3   348: EUROPEAN PATENTS_1978-2000/Jan W04
             3   349: PCT Fulltext_1983-2001/UB=20010201, UT=20010118
             5   654: US Pat.Full._1990-2001/Feb 06
           143     9: Business & Industry(R)_Jul/1994-2001/Feb 06
            15    15: ABI/Inform(R)_1971-2001/Feb 06
            69    16: Gale Group PROMT(R)_1990-2001/Feb 05
            24    18: Gale Group F&S Index(R)_1988-2001/Feb 06
            47    20: World Reporter_1997-2001/Feb 07
           131   148: Gale Group Trade & Industry DB_1976-2001/Feb 06
             4   160: Gale Group PROMT(R)_1972-1989
            11   583: Gale Group Globalbase(TM)_1986-2001/Feb 07
            21   621: Gale Group New Prod.Annou.(R)_1985-2001/Feb 06
             4   635: Business Dateline(R)_1985-2001/Feb 06
      Examined  50 files
            27   636: Gale Group Newsletter DB(TM)_1987-2001/Feb 05

   31 files have one or more items; file list includes 51 files.
   One or more terms were invalid in 2 files.

?begin 2,8,34,35,65
       07feb01 10:26:34 User219455 Session D706.2
            $1.80    1.437 DialUnits File411
     $1.80  Estimated cost File411
     $0.20  TYMNET
     $2.00  Estimated cost this search
     $2.33  Estimated total session cost   1.502 DialUnits


SYSTEM:OS  - DIALOG OneSearch
  File   2:INSPEC  1969-2001/Feb W1
         (c) 2001 Institution of Electrical Engineers
*File   2: Please note new price changes effective January 1, 2001.
See Help Rates2 for details.
  File   8:Ei Compendex(R)  1970-2001/Jan W2
         (c) 2001 Engineering Info. Inc.
  File  34:SciSearch(R) Cited Ref Sci  1990-2001/Feb W1
         (c) 2001 Inst for Sci Info
*File  34: Please note new price changes effective January 1, 2001.
See Help Rates34 for details.
  File  35:Dissertation Abstracts Online  1861-2000/Dec
         (c) 2000 UMI
  File  65:Inside Conferences  1993-2001/Feb W1
         (c) 2001 BLDSC all rts. reserv.
*File  65: CD=2000 and CY=2000 are not fully functioning.
Please see Help News65 for details.

      Set  Items  Description
      ---  -----  -----------
?s (smart and (television or tv))/ti
           13698  SMART/TI
           18645  TELEVISION/TI
           13964  TV/TI
      S1      12  (SMART AND (TELEVISION OR TV))/TI
?t 1/ti,py/1-12

 1/TI,PY/1     (Item 1 from file: 2)
```

DIALOG(R)File 2:(c) 2001 Institution of Electrical Engineers. All rts. reserv.

Title: Smart card: a smart idea for cable TV signal security?
Publication Date: May 1993
1993

1/TI,PY/2 (Item 2 from file: 2)
DIALOG(R)File 2:(c) 2001 Institution of Electrical Engineers. All rts. reserv.

Title: Smart cards exclusive advantages in pay- TV
Publication Date: 1992
1992

1/TI,PY/3 (Item 3 from file: 2)
DIALOG(R)File 2:(c) 2001 Institution of Electrical Engineers. All rts. reserv.

Title: Smart cards for subscription television: VideoCrypt-a secure solution
Publication Date: 1991
1991

1/TI,PY/4 (Item 4 from file: 2)
DIALOG(R)File 2:(c) 2001 Institution of Electrical Engineers. All rts. reserv.

Title: Pay television-future flexibility using smart cards
Publication Date: 1988
1988

1/TI,PY/5 (Item 5 from file: 2)
DIALOG(R)File 2:(c) 2001 Institution of Electrical Engineers. All rts. reserv.

Title: Signal processing for wide-screen television : the smart receiver
Publication Date: Aug. 1984
1984

1/TI,PY/6 (Item 1 from file: 8)
DIALOG(R)File 8:(c) 2001 Engineering Info. Inc. All rts. reserv.

Title: Smart cards exclusive advantages in Pay- TV.
Publication Year: 1992

1/TI,PY/7 (Item 2 from file: 8)
DIALOG(R)File 8:(c) 2001 Engineering Info. Inc. All rts. reserv.

Title: SIGNAL PROCESSING FOR WIDE-SCREEN TELEVISION : THE SMART

RECEIVER.
Publication Year: 1984

1/TI,PY/8 (Item 1 from file: 34)
DIALOG(R)File 34:(c) 2001 Inst for Sci Info. All rts. reserv.

Title: IMPACT OF TELEVISION ON NUTRITION KNOWLEDGE, ATTITUDES AND BEHAVIOR - FINDINGS FROM FAT SMART - A SPECIAL PROGRAM
, 1992

1/TI,PY/9 (Item 1 from file: 35)
DIALOG(R)File 35:(c) 2000 UMI. All rts. reserv.

SMART, CONFIDENT, YET FEMININE": PARADOXES AND CONTRADICTIONS IN WOMEN'S TELEVISION. A CASE STUDY OF THE WOMEN'S TELEVISION NETWORK
Year: 1999

1/TI,PY/10 (Item 1 from file: 65)
DIALOG(R)File 65:(c) 2001 BLDSC all rts. reserv. All rts. reserv.

Project Smart: A National Distance Learning Program via Interactive Television
CONFERENCE: Telecommunications in education
(np), (nd), ERIC, (1995)

1/TI,PY/11 (Item 2 from file: 65)
DIALOG(R)File 65:(c) 2001 BLDSC all rts. reserv. All rts. reserv.

Digital TV - The Case for Smart Cards
CONFERENCE: Vol 2; Applications
CardTech/Securtech Inc, 1996

1/TI,PY/12 (Item 3 from file: 65)
DIALOG(R)File 65:(c) 2001 BLDSC all rts. reserv. All rts. reserv.

The Smart Frame Buffer Goes Hollywood: 3D and TV (Abstract only)
CONFERENCE: Annual X technical conference
O'Reilly & Associates, 1994
?t 1/9/5,7

1/9/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2001 Institution of Electrical Engineers. All rts. reserv.

02359097 INSPEC Abstract Number: B85003652
Title: Signal processing for wide-screen television : the smart receiver
Author(s): Nadan, J.S.; Jackson, R.N.
Author Affiliation: Philips Lab., Briarcliff Manor, NY, USA
Journal: SMPTE Journal vol.93, no.8 p.726-9
Publication Date: Aug. 1984 Country of Publication: USA
CODEN: SMPJDF ISSN: 0036-1682

Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: The television receiver is no longer a simple single-input-medium unit. Input from tape, disk, home computers, terrestrial broadcast, and cable must now be accommodated. Soon direct broadcast by satellite and the questions of extended definition and wide-screen presentation will have to be faced. This article defines some practical goals for enhanced television systems and discusses how they may be achieved using VLSI technology in home receivers. (6 Refs)
Subfile: B
Descriptors: signal processing; television receivers
Identifiers: signal processing; wide-screen television; smart receiver; tape; disk; home computers; terrestrial broadcast; cable; VLSI
Class Codes: B6420D (Radio and television receivers)

1/9/7 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

01572861 E.I. Monthly No: EI8410110409 E.I. Yearly No: EI84116886
Title: SIGNAL PROCESSING FOR WIDE-SCREEN TELEVISION : THE SMART RECEIVER.
Author: Nadan, Joseph S.; Jackson, Richard N.
Corporate Source: Philips Lab, Briarcliff Manor, NY, USA
Source: SMPTE Journal v 93 n 8 Aug 1984 p 726-729
Publication Year: 1984
CODEN: SMPJDF ISSN: 0036-1682
Language: ENGLISH
Journal Announcement: 8410
Abstract: The television receiver is no longer a simple single-input-medium unit. Input from tape, disk, home computers, terrestrial broadcast, and cable must now be accommodated. Soon direct broadcast by satellite and the questions of extended definition and wide-screen presentation will have to be faced. This article defines some practical goals for enhanced television systems and discusses how they may be achieved using VLSI technology in home receivers. 6 refs.
Descriptors: *SIGNAL PROCESSING--*Imaging Techniques; TELEVISION RECEIVERS--Design; INTEGRATED CIRCUITS, VLSI--Applications
Identifiers: WIDE-SCREEN TELEVISION; HOME RECEIVERS
Classification Codes:
716 (Radar, Radio & TV Electronic Equipment); 741 (Optics & Optical Devices); 713 (Electronic Circuits)
71 (ELECTRONICS & COMMUNICATIONS); 74 (OPTICAL TECHNOLOGY)
?begin 275,647,674
07feb01 10:29:40 User219455 Session D706.3
$0.72 0.117 DialUnits File2
$2.25 1 Type(s) in Format 9
$11.25 5 Type(s) in Format 55 (UDF)
$13.50 6 Types
$14.22 Estimated cost File2
$0.40 0.062 DialUnits File8
$2.20 1 Type(s) in Format 9
$0.00 2 Type(s) in Format 6 (UDF)
$2.20 3 Types
$2.60 Estimated cost File8
$0.53 0.037 DialUnits File34

```
          $4.20  1 Type(s) in Format  2 (UDF)
        $4.20  1 Types
  $4.73 Estimated cost File34
        $0.15    0.037 DialUnits File35
          $0.00  1 Type(s) in Format  6 (UDF)
        $0.00  1 Types
  $0.15 Estimated cost File35
        $0.16    0.043 DialUnits File65
          $3.15  3 Type(s) in Format  2 (UDF)
        $3.15  3 Types
  $3.31 Estimated cost File65
        OneSearch, 5 files,  0.297 DialUnits FileOS
  $0.20 TYMNET
 $25.21 Estimated cost this search
 $27.54 Estimated total session cost   1.799 DialUnits


SYSTEM:OS  - DIALOG OneSearch
  File 275:Gale Group Computer DB(TM)  1983-2001/Feb 02
        (c) 2001 The Gale Group
  File 647:CMP  Computer Fulltext  1988-2001/Feb W1
        (c) 2001 CMP
  File 674:Computer News Fulltext  1989-2000/Jan W4
        (c) 2001 IDG Communications

      Set  Items  Description
      ---  -----  -----------
?s (smart and (television or tv))/ti
           4979  SMART/TI
           2015  TELEVISION/TI
           5329  TV/TI
      S1     19  (SMART AND (TELEVISION OR TV))/TI
?t 1/ti,py/1-19

 1/TI,PY/1     (Item 1 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Netscape pioneer to invest in  smart VCR; will take stake in replay
 networks, one of custom  TV start-ups.(Netscape co-founder Marc
 Andreesen)(Company Business and Marketing)
1998


 1/TI,PY/2     (Item 2 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Getting down to business. (American Express Small Business Exchange,  Smart
  Business Supersite, Court  TV Small Business Law Center and U.S.
 Business Advisor Web sites) (Internet/Web/Online Service
 Information)(Brief Article)
1998


 1/TI,PY/3     (Item 3 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Dossier five: puzzles. (Hasbro Interactive's Pictionary,  Smart Games'
```

Smart Games #2, Berkeley Systems' You Don't Know Jack 3 and You Don't Know Jack TV, puzzle computer games demonstrated at E3)(For Your Eyes only)(Product Announcement)
1997

1/TI,PY/4 (Item 4 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

LOYALTY POINT SCHEMES WILL EXTEND TO PHONES AND TV WITH THE AID OF SMART CARDS.
1997

1/TI,PY/5 (Item 5 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Smart TV From LG Electronics Has Built-In Eye.
1997

1/TI,PY/6 (Item 6 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Smart TV. (long-awaited standard for HDTV announced)(Pipeline) (Technology Information)(Brief Article)
1997

1/TI,PY/7 (Item 7 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Expand your TV. (Curtis Mathes' UniView TV with CPU amd modem; Philips/Magnavox and Zenith developing smart TVs) (Product Development)(Brief Article)
1996

1/TI,PY/8 (Item 8 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Multimedia: Oracle Media Net hides network complexity. Enables connection of Oracle Media Server to multiple smart tv devices. (Oracle Corp.'s video communications software) (Product Announcement)
1994

1/TI,PY/9 (Item 9 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

TVs get smart; computer chips transform television. (vendors experimenting with intelligent cable boxes) (Trends) (Brief Article)
1994

1/TI,PY/10 (Item 10 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Windows video capture cards. (Hardware Review) (includes related articles on video capture)(Fast Electronic US's Movie Machine Pro, Intel's Smart Video Recorder Pro, Miro Computer Products' miroVIDEO DCI tv and In-Motion Technologies' Picture Perfect Pro video capture cards) (Evaluation)
1994

1/TI,PY/11 (Item 11 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

PS/2 TV and the ' smart classroom.' (IBM Corp.'s multimedia microcomputer)(Special Advertising Section)
1993

1/TI,PY/12 (Item 12 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Like it or not, ' smart television' is in your future. (Column)
1993

1/TI,PY/13 (Item 13 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Battles loom for control of TV's portal to cable. (includes related article on milestones in the development of smart television)
1993

1/TI,PY/14 (Item 14 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Television takes a new shape. (smart television) (part of a special supplement on next-generation computing)
1992

1/TI,PY/15 (Item 15 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Smart sets: age of interactive TV may be nearing as IBM and Warner talk deal; viewers could dial a show, then shift pieces about or create own replays; a commercial just for you.
1992

1/TI,PY/16 (Item 16 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Money- smart ways to advertise on TV and radio. (part 2 of advertising series)
1990

1/TI,PY/17 (Item 17 from file: 275)
DIALOG(R)File 275:(c) 2001 The Gale Group. All rts. reserv.

Money- smart ways to advertise on TV and radio: diversify your ad campaign by tuning in to the broadcast media. (Advertising, part 2)
1990

1/TI,PY/18 (Item 1 from file: 647)
DIALOG(R)File 647:(c) 2001 CMP. All rts. reserv.

Boob tube,' move over for smart TV
, 1996

1/TI,PY/19 (Item 2 from file: 647)
DIALOG(R)File 647:(c) 2001 CMP. All rts. reserv.

BRITISH SYSTEM TO USE SMART CARD FOR DECODING: Pay TV in the cards
, 1989
?t 1/2,ab,kwic/7,9,12,14,15,18
>>>No matching display code(s) found in file(s): 674

1/2,AB,KWIC/7 (Item 7 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
(c) 2001 The Gale Group. All rts. reserv.

01992784 SUPPLIER NUMBER: 18711480 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Expand your TV. (Curtis Mathes' UniView TV with CPU amd modem; Philips/Magnavox and Zenith developing smart TVs) (Product Development)(Brief Article)
Fischer, Andy
Computer Life, v3, n10, p34(1)
Oct, 1996
DOCUMENT TYPE: Brief Article ISSN: 1076-9862 LANGUAGE: English
RECORD TYPE: Fulltext
WORD COUNT: 154 LINE COUNT: 00014

COMPANY NAMES: Curtis Mathes Corp.--Product development; Philips Electronics North America Corp. Magnavox CATV Systems Inc.--Product development; Zenith Datasystems Inc.--Product development
DESCRIPTORS: Television; Hardware Product Development
SIC CODES: 3651 Household audio and video equipment; 3571 Electronic computers
FILE SEGMENT: CD File 275

Expand your TV. (Curtis Mathes' UniView TV with CPU amd modem; Philips/Magnavox and Zenith developing smart TVs) (Product Development)(Brief Article)

1/2,AB,KWIC/9 (Item 9 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
(c) 2001 The Gale Group. All rts. reserv.

01665608 SUPPLIER NUMBER: 15042210 (USE FORMAT 7 OR 9 FOR FULL TEXT)
TVs get smart; computer chips transform television. (vendors

experimenting with intelligent cable boxes) (Trends) (Brief Article)
Barr, Christopher
PC Magazine, v13, n4, p29(1)
Feb 22, 1994
DOCUMENT TYPE: Brief Article ISSN: 0888-8507 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT
WORD COUNT: 418 LINE COUNT: 00033

DESCRIPTORS: Microcomputer; Research and Development; Cable Television; Interactive Cable
FILE SEGMENT: CD File 275

TVs get smart; computer chips transform television. (vendors experimenting with intelligent cable boxes) (Trends) (Brief Article)

1/2,AB,KWIC/12 (Item 12 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01561841 SUPPLIER NUMBER: 13718404
Like it or not, ' smart television' is in your future. (Column)
Flynn, Laurie
San Jose Mercury News, p1F(2)
April 11, 1993
DOCUMENT TYPE: Column ISSN: 0747-2099 LANGUAGE: ENGLISH
RECORD TYPE: ABSTRACT

ABSTRACT: Tandy Corp's Video Information System (VIS), which appeared in the summer of 1992, allows users to access compact disc-read only memory (CD-ROM) information via television sets. At that time, Tandy announced that it would cooperate with Microsoft Corp to sell $700 VISs, but the product did not sell well because it was too expensive and there was not enough software for it. The VIS's list price is now down to $399, and more software is available. Other companies including industry leaders such as Apple and Microsoft Corp are working on products for televisions that function as interactive information devices, and telecommunications companies such as Pacific Bell are planning physical networks that will deliver information to the home. It now seems inevitable that 'smart television' will play a part in everyone's future.
COMPANY NAMES: Tandy Corp.--Products
DESCRIPTORS: Interactive Systems; Television Equipment; Future Technologies
SIC CODES: 5731 Radio, TV, & electronic stores; 6794 Patent owners and lessors
TICKER SYMBOLS: MSFT; PAC; AAPL; TAN
TRADE NAMES: Tandy Video Information System (Multimedia upgrade kit)--Marketing
FILE SEGMENT: CD File 275

Like it or not, ' smart television' is in your future. (Column)

1/2,AB,KWIC/14 (Item 14 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01474644 SUPPLIER NUMBER: 12205992
Television takes a new shape. (smart television) (part of a special supplement on next-generation computing)
Blissmer, Robert H.
Electronic Engineering Times, n693, pC47(1)
May 18, 1992
ISSN: 0192-1541 LANGUAGE: ENGLISH RECORD TYPE: ABSTRACT

ABSTRACT: The smart television sets of the future will allow users to interact with their televisions much in the same manner current users interact with their computers. The change to all-digital television will turn the television set into a digital video computer capable of storing, editing, originating and transmitting images as well as receiving them. The FroxSystem, from Frox Inc, is the forerunner of future entertainment and information systems. Interactive television systems are expected to hit the market in 1993. The best systems will be able to be customized to respond to individual tastes through the use of software agents. These agents will browse television listings and schedules to find programming the user is interested in, provide view clips and store choices for viewing at a later time.
COMPANY NAMES: Frox Inc.--Products
DESCRIPTORS: Television Equipment; Television Sets; Future of Computing; Interactive Systems
SIC CODES: 3651 Household audio and video equipment
TRADE NAMES: Frox FroxSystem (Special-purpose computer system)--Usage
FILE SEGMENT: CD File 275

Television takes a new shape. (smart television) (part of a special supplement on next-generation computing)

1/2,AB,KWIC/15 (Item 15 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01474165 SUPPLIER NUMBER: 12349499
Smart sets: age of interactive TV may be nearing as IBM and Warner talk deal; viewers could dial a show, then shift pieces about or create own replays; a commercial just for you.
Roberts, Johnnie L.; Carroll, Paul B.; Reilly, Patrick M.
Wall Street Journal , Thu ed, col 1, pA1(W) pA1(E)
May 21, 1992
ISSN: 0193-2241 LANGUAGE: ENGLISH RECORD TYPE: ABSTRACT

ABSTRACT: Time Warner Inc is reportedly talking with IBM about combining computer capabilities with cable television systems, though neither company confirms this. Meanwhile, Time Warner is conducting a trial of a 150-channel cable system that allows customers to 'interact' with their television sets, choosing pay-per-view movies and using computer-like arrangements to scan through channels and program listings. Eventually, systems will incorporate features of computers, television sets and compact disk players, with customers empowered with interactive control. A deal between the world's largest computer company and the world's largest entertainment company would signify a major step toward actualizing these possibilities. Since the 1960s, American television has provided a diverse and multicultural population with a common, shared experience. The social consequences of altering the nation's media in a fundamental way are open

to speculation.

COMPANY NAMES: Time Warner Inc.--Planning; International Business Machines Corp.--Planning
DESCRIPTORS: Cable Television; Interactive Cable; Cooperative Agreements; Strategic Planning; Industry Analysis; Outlook; Future Technologies; Computer industry
SIC CODES: 4841 Cable and other pay TV services; 3571 Electronic computers; 7812 Motion picture & video production; 2741 Miscellaneous publishing; 7372 Prepackaged software
TICKER SYMBOLS: IBM
FILE SEGMENT: NNI File 111

Smart sets: age of interactive TV may be nearing as IBM and Warner talk deal; viewers could dial a show, then...

1/2,AB,KWIC/18 (Item 1 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext

01082790 CMP ACCESSION NUMBER: EET19960226S0002
Boob tube,' move over for smart TV
Junko Yoshida
ELECTRONIC ENGINEERING TIMES, 1996, n 890, PG1
PUBLICATION DATE: 960226
JOURNAL CODE: EET LANGUAGE: English
RECORD TYPE: Fulltext
SECTION HEADING: News
WORD COUNT: 1679
TEXT:
San Mateo, Calif. - The "boob tube" could soon make way for the smart television. If consumer-electronics manufacturers meet their self-imposed deadline, intelligent digital-TV platforms will appear by Christmas that will run applications, sport graphical user interfaces and built-in "back channels," and come equipped with hard- drive or flash storage.

Boob tube,' move over for smart TV
?t 1/9/7,9,12,14,15,18

1/9/7 (Item 7 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01992784 SUPPLIER NUMBER: 18711480 (THIS IS THE FULL TEXT)
Expand your TV. (Curtis Mathes' UniView TV with CPU amd modem; Philips/Magnavox and Zenith developing smart TVs) (Product Development)(Brief Article)
Fischer, Andy
Computer Life, v3, n10, p34(1)
Oct, 1996
DOCUMENT TYPE: Brief Article ISSN: 1076-9862 LANGUAGE: English
RECORD TYPE: Fulltext
WORD COUNT: 154 LINE COUNT: 00014

TEXT:
A lot of companies are building low-cost Web browsers designed to work

with televisions. But if Curtis Mathes, Philips/Magnavox, and Zenith have their way, the Web-browser set-top box may be just a passing phase: These companies are building browsers directly into TVs.

The UniView from Curtis Mathes, which should be available soon, is not just a top-of-the-line TV set. With a Motorola CPU, up to 11MB of memory, and a fax modem, it'll let you surf the Web, check e-mail, and even take phone calls from your recliner. Philips/Magnavox and Zenith plan to give TVs the smarts to access regularly updated electronic programming guides and to selectively block programs.

These features will raise the price of the TV, but you may be able to make up the cost with a tax deduction: Just donate your old set to the Smithsonian.

COMPANY NAMES: Curtis Mathes Corp.--Product development; Philips Electronics North America Corp. Magnavox CATV Systems Inc.--Product development; Zenith Datasystems Inc.--Product development
DESCRIPTORS: Television; Hardware Product Development
SIC CODES: 3651 Household audio and video equipment; 3571 Electronic computers
FILE SEGMENT: CD File 275

1/9/9 (Item 9 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01665608 SUPPLIER NUMBER: 15042210 (THIS IS THE FULL TEXT)
TVs get smart; computer chips transform television. (vendors experimenting with intelligent cable boxes) (Trends) (Brief Article)
Barr, Christopher
PC Magazine, v13, n4, p29(1)
Feb 22, 1994
DOCUMENT TYPE: Brief Article ISSN: 0888-8507 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT
WORD COUNT: 418 LINE COUNT: 00033

TEXT:

Intelligent is not a word that normally describes a television set, but when a cable-equipped TV meets a computer, the offspring is smart. Smart enough, in fact, to navigate the oncoming digital tidal wave.

The cast of characters gambling on smart TV includes names familiar in the computer industry--Hewlett-Packard Co., Intel Corp., Kaleida Labs, Motorola, and Silicon Graphics. They're all experimenting with technology that weds workstation components with cable boxes destined not for computer scientists but for throngs of consumers who've never touched a PC before. They've teamed up with cable box manufacturers to develop prototype systems that will begin testing this year.

Intelligent cable boxes, or set tops, bridge the gap between today's analog TV and tomorrow's interactive digital TV. Most will contain a processor, a graphics chip, an infrared remote controller, and a cable tuner. They actually do something with the digital signal as well as display it. To manage 500 channels over existing coaxial cable, smart cable boxes will incorporate an MPEG chip to decode the compressed digital audio and video information as it's received.

Prototypes abound. Today's experimental models use chips such as Motorola's PowerPC, Intel's 486, the ARM 60, and the MIPS 4000. To generate

high-quality animation and 3-D graphics, they rely on dedicated graphics controllers such as the 3DO graphics chip or Kaleida Labs' Malibu chip, which is used in Scientific-Atlanta's prototype box (code-named Project Skywalker).

Hewlett-Packard has developed two space-age prototypes: One uses a Motorola processor; the other uses an Intel processor. Both will offer video-on-demand services and interactive programming so you can watch what you want when you want it.

But are they PCs? Just because they have processors and graphics chips, these smart cable boxes won't replace home computers. They're strictly for TVs. They run proprietary operating systems, not DOS or Windows. For PCs, new peripherals such as cable modems from Zenith Data Systems and Intel provide direct access to CompuServe, the Internet, and Prodigy without dialing over phone lines.

With all the different players, which set-top platform will dominate? We'll have to wait a few years before cable-based multimedia software standards are established. In the meantime, cable companies will lay fiber-optic lines to neighborhoods and develop two-way cable technologies. By that time, a computer chip may reside in your TV.

DESCRIPTORS: Microcomputer; Research and Development; Cable Television; Interactive Cable
FILE SEGMENT: CD File 275

1/9/12 (Item 12 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01561841 SUPPLIER NUMBER: 13718404
Like it or not, ' smart television' is in your future. (Column)
Flynn, Laurie
San Jose Mercury News, p1F(2)
April 11, 1993
DOCUMENT TYPE: Column ISSN: 0747-2099 LANGUAGE: ENGLISH
RECORD TYPE: ABSTRACT

ABSTRACT: Tandy Corp's Video Information System (VIS), which appeared in the summer of 1992, allows users to access compact disc-read only memory (CD-ROM) information via television sets. At that time, Tandy announced that it would cooperate with Microsoft Corp to sell $700 VISs, but the product did not sell well because it was too expensive and there was not enough software for it. The VIS's list price is now down to $399, and more software is available. Other companies including industry leaders such as Apple and Microsoft Corp are working on products for televisions that function as interactive information devices, and telecommunications companies such as Pacific Bell are planning physical networks that will deliver information to the home. It now seems inevitable that 'smart television' will play a part in everyone's future.

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DESCRIPTORS: Interactive Systems; Television Equipment; Future Technologies
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TRADE NAMES: Tandy Video Information System (Multimedia upgrade kit)--

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1/9/14 (Item 14 from file: 275)
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1/9/15 (Item 15 from file: 275)
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TICKER SYMBOLS: IBM
FILE SEGMENT: NNI File 111

1/9/18 (Item 1 from file: 647)
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Sounds a bit like a personal computer, doesn't it? Don't let the television makers hear you saying that.

Their mission is not to emulate the PC, but to build margins back into the TV-equipment business by offering "integration and interactivity, according to Hoyet Andrews, III, director of advanced digital TV product planning at Philips Consumer Electronics Co. (Knoxville, Tenn.). "We can integrate core functions of some home appliances or even some features outboarded from a PC, substituting them with a new product that is much more useful and easier to use than the original."

With the rapid emergence of such digital consumer products as DVDs, camcorders and satellite decoder boxes, TV makers see an opportunity to design a common digital TV platform that can link to various peripherals and even integrate functions that have historically been the domain of other consumer products. Such a platform would allow various digital consumer components to share common resources-MPEG, AC-3 decoding and more elaborate graphics capabilities-and thus cut cost across product lines.

The pace of digital-TV development is "moving at lightning speed,"

said Al Moschner, president and chief executive officer of Zenith Electronics Corp. (Glenview, Ill.). Gone are the days, he said, when consumer-electronics manufacturers, "scrambling to save pennies," limited their equipment upgrades to the cosmetic.

Andrews of Philips illustrated the point by envisioning a TV integrated with a VCR and a telephone. The user could program the VCR simply by highlighting his program choice in an on-screen menu and dropping the title into a videocassette icon. Should the phone ring, the user could press a caller-ID button on the TV's remote-control unit. If the caller passes muster, the user could take the call by hitting the mute button on the remote and conversing via speakerphone. Or the user could avoid answering a nuisance call by pressing "delete" on the remote.

From a system-design perspective, the biggest difference between the PC and TV platform is that the latter is far more application- driven. Whereas PC designers have tended to base development on the availability of increased processing power and to worry about applications later, "we have to know first exactly what applications TV is supposed to run," said Thomas Sorensen, manager of new technology and strategic planning at Zenith's Consumer Products Division.

Yet TV manufacturers believe that they are "in a much better position" than systems vendors "to develop and design things that make sense to the common man," Sorensen said.

Andrews echoed that sentiment. "Our products don't boot up," he noted. "If they did, consumers would take them back to the store. And they have to be built on a very robust platform; no system crashes are allowed."

So consumer-electronics companies stand at a crossroads. The first steps, said Sorensen, are to "carefully choose and select applications" and to add features "that could enhance the TV viewing experience to a degree that it makes sense to consumers."

Building blocks

The basic building blocks for the digital-TV platform are digital encryption/decryption, video decompression, AC-3 audio decoding, and the ability to manipulate bit-mapped (rather than character-based) graphics. Each developer is pursuing its own schemes for implementing those functional blocks.

Some plan to use I2C buses, for which conventional 8-bit microcontrollers are more than adequate. Others, such as Philips, envision use of the Peripheral Component Interconnect (PCI) bus for certain high-bandwidth, high-speed applications and are thus looking to 32-bit microprocessors. Digital signal processors are being considered as a means for allowing software upgrades.

For Zenith, said Sorensen, "a microprocessor itself (as a system CPU) is not so much a focal point. A real question is how much processing power we need for providing comprehensive and attractive on-screen graphics.

"As far as the role of the graphics engine is concerned, I think we've only scratched the surface. Everyone in this industry is still scrambling to understand the technology."

Pumping up the on-screen-display processing power, of course, ups the system memory requirement. Designing a dedicated ASIC for the on-screen display is one solution. But predicting future graphics capability is an inexact science.

Tom Zato, director of small-signal engineering at Zenith, thinks multiple, distributed 8-bit microcontrollers may be the best path to an overall system architecture. Assuming that dedicated chips will be used for MPEG-2 decoding and AC-3 processing, "most of the control functions

and registers within the system are 8 bits wide. The use of a 16-bit or 32-bit microprocessor may be excessive," he said.

But Philips, which Andrews noted "has embraced the MIPS architecture for products across the board," will incorporate a MIPS- based RISC microprocessor in its initial product. Longer term, the plan is to use TriMedia's programmable VLIW (very long instruction word)-based media processor in conjunction with the MIPS architecture.

Those plans will leverage the consumer-electronics giant's access to Philips Semiconductor, which holds MIPS R3000 and R4000 licenses (see page 10, Oct. 23) and which owns the TriMedia group (Sunnyvale, Calif.)

Added processing power, Andrews said, "buys us the ability to execute software faster, allowing the TV system to offer multiple tasking capabilities and add such functions as modem, telephone, etc. Certainly, it also provides much more attractive and useful on- screen-display features."

Such features could include the use of logo-based channel icons, rather than character-based channel-ID numbers, in bit-mapped graphics to improve navigation, Andrews said. "We are taking the same 'icon' concept as on a PC, but we're enhancing it on a platform that makes more sense. That's the value we can add."

Philips plans to field what it calls "trial products" this fall and to bring out a full-fledged smart digital TV in 1997.

Zenith's Sorensen echoed the importance of ease of navigation, with on-screen-display graphics enabling users to get where they want to be without steering through multiple screen "layers."

Chip choices

Silicon vendors confirmed that the issue of the best engine for the digital-TV platform is far from settled. Some Japanese TV manufacturers said they have hosted visitors from a number of chip companies, which have pitched a range of options, including the MIPS, PowerPC, Motorola Coldfire and Advanced RISC Machines ARM architectures.

Noel Hurley, market-segment manager for consumer and multimedia products at Advanced RISC Machines, believes the field remains wide open. "TV is becoming an increasingly convenient place to integrate a drive for a CD-ROM/DVD, a game platform, a satellite decoder or any other digital-transmission types of peripherals," he said. While most TVs today use an 8-bit microcontroller, "we're beginning to see some companies move to a 16-bit processor. Our argument (with potential customers) is, 'Why not make a jump to 32 bits, to get headroom and a cleaner architecture that can become a target platform for software development?' "

Hurley said ARM is pitching its Thumb core as a path to a small, lower-priced, low-power silicon solution for digital-TV development.

Generally speaking, however, consumer-electronics manufacturers are moving cautiously in embracing more powerful processors. "We have to weigh very carefully what specific functions, applications or convenience could be enabled by a new microprocessor that would clearly be perceived by consumers as tangible value-add," said Youichi Utsumi, general manager of the second engineering department at JVC's Television Division.

While PC users have grown accustomed to upgrading their PCs every few years as more powerful engines arrive, Utsumi noted that consumers will pay more for a new TV only when they perceive a specific benefit in the form of a previously unavailable function or application.

Andrews of Philips concurred that when choosing a new TV, consumers don't much care what's under the hood. Whereas PC vendors' pitches for new models often boast about the processing engine, "telling our customers what new MIPS processor is inside our TV is not part of our strategy," he noted.

Rather, the emphasis at Philips is on the internal benefits of sticking with the MIPS architecture."By having a core platform based on MIPS," Andrews said, "we can benefit from common application- programming interfaces, libraries and code reuse. We can borrow specific applications or code that has been already developed for other products and spin them onto new products, thus shortening product-design cycles.

"We no longer have to invent everything from the ground up every time we develop something new."

That's no small benefit, given the increasing importance of software development. Software concerns grow critical as systems engineers are asked to develop multiple products based on a common digital-TV platform.

The need to "design for upgradability" also figures into the process. The trial systems that debut in the next eight to 10 months will focus on usability, with fully functional 32-bit platforms unlikely to emerge until after SDTV/HDTV comes on line. SDTV/HDTV systems are expected to appear in the U.S. market late in 1997 or early in 1998, though the current political climate could derail those plans. So the question marks abound.

TV manufacturers must decide whether to build a multi-synchronized platform or one with a common data output. One could build a system that could accept all of the video and data formats-NTSC, MPEG, SDTV/ HDTV and VGA-based computer data-process the signals and provide an output in the original format. Or developers could settle on a native format and then craft a system that could convert all the different incoming signals into that format for display.

Zenith executives said that the company has yet to sort out all the trade-offs and make a final decision on the most appropriate approach.

Andrews of Philips said it is that company's intention to make its first ATV capable of displaying all the different video input formats included in 1,920 x 1,080 progressive format.

Perhaps the only certainty is that as the industry makes its transition from NTSC to ATV, the various players will implement a host of interim solutions, all addressing different price/performance points.

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File 411:DIALINDEX(R)

DIALINDEX(R)
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*** DIALINDEX search results display in an abbreviated ***
*** format unless you enter the SET DETAIL ON command. ***
?sf compsci,patents,eecomp,electron
>>>         351 is unauthorized
>>>         352 is unauthorized
>>>         353 is unauthorized
>>>3 of the specified files are not available
   You have 51 files in your file list.
   (To see banners, use SHOW FILES command)
?show files

File  Name
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   2: INSPEC_1969-2001/Feb W1
   6: NTIS_1964-2001/Feb W3
   8: Ei Compendex(R)_1970-2001/Jan W2
  34: SciSearch(R) Cited Ref Sci_1990-2001/Feb W1
  35: Dissertation Abstracts Online_1861-2000/Dec
  65: Inside Conferences_1993-2001/Feb W1
  77: Conference Papers Index_1973-2000/Nov
  92: IHS Intl.Stds.& Specs._1999/Nov
  94: JICST-EPlus_1985-2001/Jan W3
  99: Wilson Appl. Sci & Tech Abs_1983-2001/Dec
 103: Energy SciTec_1974-2001/Jan B1
 108: AEROSPACE DATABASE_1962-2001/JAN
 144: Pascal_1973-2001/Feb W1
 202: Information Science Abs._1966-2000/ISSUE 09
 233: Internet & Personal Comp. Abs._1981-2001/Feb
 238: Abs. in New Tech & Eng._1981-2001/Jan
 239: Mathsci_1940-2001/Feb
 275: Gale Group Computer DB(TM)_1983-2001/Feb 02
 434: SciSearch(R) Cited Ref Sci_1974-1989/Dec
 647: CMP  Computer Fulltext_1988-2001/Feb W1
 674: Computer News Fulltext_1989-2000/Jan W4
 696: DIALOG Telecom. Newsletters_1995-2001/Feb 06
 123: CLAIMS(R)/Current Legal Status_1980-2001/Jan 23
 340: CLAIMS(R)/US PATENT_1950-01/JAN 30
 342: Derwent Patents Citation Indx_1978-00/200105
 344: CHINESE PATENTS ABS_APR 1985-2001/JAN
 345: Inpadoc/Fam.& Legal Stat_1968-2000/UD=200104
 347: JAPIO_Oct 1976-2000/Jul(UPDATED 001114)
 348: EUROPEAN PATENTS_1978-2000/Jan W04
 349: PCT Fulltext_1983-2001/UB=20010201, UT=20010118
 371: French Patents_1961-2000/BOPI 0052
 447: IMSWorld Patents International_2001/Jan
 652: US Patents Fulltext_1971-1979
 653: US Patents Fulltext_1980-1989
 654: US Pat.Full._1990-2001/Feb 06
 670: LitAlert_1973-2000/UD=200105
 241: Elec. Power DB_1972-1999Jan
   9: Business & Industry(R)_Jul/1994-2001/Feb 06
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  15: ABI/Inform(R)_1971-2001/Feb 06
  16: Gale Group PROMT(R)_1990-2001/Feb 05
  18: Gale Group F&S Index(R)_1988-2001/Feb 06
  20: World Reporter_1997-2001/Feb 07
 148: Gale Group Trade & Industry DB_1976-2001/Feb 06
 160: Gale Group PROMT(R)_1972-1989
 256: SoftBase:Reviews,Companies&Prods._85-2001/Jan
 481: DELPHES EUR BUS_80-1999/DEC W3
 583: Gale Group Globalbase(TM)_1986-2001/Feb 07
 621: Gale Group New Prod.Annou.(R)_1985-2001/Feb 06
 624: McGraw-Hill Publications_1985-2001/Feb 07
 635: Business Dateline(R)_1985-2001/Feb 06
 636: Gale Group Newsletter DB(TM)_1987-2001/Feb 05

?s ((program or electronic or tv) (w) guide?) (15n) search?

Your SELECT statement is:
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          Items   File
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              2     2: INSPEC_1969-2001/Feb W1
              1   202: Information Science Abs._1966-2000/ISSUE 09
              1   233: Internet & Personal Comp. Abs._1981-2001/Feb
             28   275: Gale Group Computer DB(TM)_1983-2001/Feb 02
              5   647: CMP  Computer Fulltext_1988-2001/Feb W1
              1   674: Computer News Fulltext_1989-2000/Jan W4
             14   696: DIALOG Telecom. Newsletters_1995-2001/Feb 06
              6   340: CLAIMS(R)/US PATENT_1950-01/JAN 30
              3   342: Derwent Patents Citation Indx_1978-00/200105
              1   344: CHINESE PATENTS ABS_APR 1985-2001/JAN
             11   345: Inpadoc/Fam.& Legal Stat_1968-2000/UD=200104
              1   347: JAPIO_Oct 1976-2000/Jul(UPDATED 001114)
             22   348: EUROPEAN PATENTS_1978-2000/Jan W04
             71   349: PCT Fulltext_1983-2001/UB=20010201, UT=20010118
              1   652: US Patents Fulltext_1971-1979
             45   654: US Pat.Full._1990-2001/Feb 06
              3   241: Elec. Power DB_1972-1999Jan
             24     9: Business & Industry(R)_Jul/1994-2001/Feb 06
             22    15: ABI/Inform(R)_1971-2001/Feb 06
            140    16: Gale Group PROMT(R)_1990-2001/Feb 05
              4    18: Gale Group F&S Index(R)_1988-2001/Feb 06
             86    20: World Reporter_1997-2001/Feb 07
            129   148: Gale Group Trade & Industry DB_1976-2001/Feb 06
              1   160: Gale Group PROMT(R)_1972-1989
              1   256: SoftBase:Reviews,Companies&Prods._85-2001/Jan
              1   583: Gale Group Globalbase(TM)_1986-2001/Feb 07
             67   621: Gale Group New Prod.Annou.(R)_1985-2001/Feb 06
              2   624: McGraw-Hill Publications_1985-2001/Feb 07
             16   635: Business Dateline(R)_1985-2001/Feb 06
      Examined  50 files
             64   636: Gale Group Newsletter DB(TM)_1987-2001/Feb 05

   30 files have one or more items; file list includes 51 files.

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SYSTEM:OS  - DIALOG OneSearch
  File   2:INSPEC  1969-2001/Feb W1
         (c) 2001 Institution of Electrical Engineers
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See Help Rates2 for details.
  File 202:Information Science Abs.  1966-2000/ISSUE 09
         (c) Information Today, Inc
*File 202: The file now includes e-journals. For more information
see Help News202.
  File 233:Internet & Personal Comp. Abs.  1981-2001/Feb
         (c) 2001 Info. Today Inc.

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? s ((program or electronic or tv) (w) guide?) (15n) search?
          310384  PROGRAM
          334500  ELECTRONIC
           31798  TV
          117151  GUIDE?
          139195  SEARCH?
      S1       4  ((PROGRAM OR ELECTRONIC OR TV) (W) GUIDE?) (15N) SEARCH?
?t 1/9/1-4

 1/9/1     (Item 1 from file: 2)
DIALOG(R)File   2:INSPEC
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6220974   INSPEC Abstract Number: C1999-05-6160M-027
 Title:  VideoAnywhere:  a  system  for searching and managing distributed
heterogeneous video assets
  Author(s): Sheth, A.; Bertram, C.; Shah, K.
  Author Affiliation: Dept. of Comput. Sci., Georgia Univ., Athens, GA, USA
  Journal: SIGMOD Record    vol.28, no.1    p.104-9
  Publisher: ACM,
  Publication Date: March 1999  Country of Publication: USA
  CODEN: SRECD8  ISSN: 0163-5808
  SICI: 0163-5808(199903)28:1L.104:VSSM;1-H
  Material Identity Number: A660-1999-001
  Language: English    Document Type: Journal Paper (JP)
  Treatment: Practical (P)
  Abstract: Visual information, especially videos, plays an increasing role
in  our  society  for  both  work  and entertainment as more sources become
available  to  the user. Set-top boxes are poised to give home users access
to  videos that come not only from TV channels and personal recordings, but
also  from  the  Internet in the form of downloaded and streaming videos of
various  types.  Current  approaches,  such as electronic program  guides
 and  video search  engines, search  for video assets of one type or from
one  source.  The  capability  to conveniently search through many types of
video  assets  from  a  large number of video sources with easy-to-use user
profiles  cannot  be found anywhere yet. VideoAnywhere has developed such a
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capability in the form of an extensible architecture as well as a specific implementation using the latest in Internet programming (Java, agents, XML, etc.) and applicable standards. It automatically extracts and manages an extensible set of metadata of major types of videos that can be queried using either attribute-based or keyword-based searching. It also provides user profiling that can be combined with the query processing for filtering. A user-friendly interface provides management of all system functions and capabilities. VideoAnywhere can also be used as a video search engine for the World Wide Web, and a servlet-based version has also been implemented. (37 Refs)

Subfile: C

Descriptors: distributed databases; information resources; Internet; online front-ends; query processing; search engines; user interfaces; video databases

Identifiers: VideoAnywhere; distributed heterogeneous video assets; set-top boxes; TV channels; personal recordings; Internet programming; downloaded videos; streaming videos; electronic programme guides; video search engine; asset management; video sources; user profiles; extensible architecture; standards; extensible metadata set; attribute-based searching ; keyword-based searching; query processing; filtering; user-friendly interface; system function management; World Wide Web; servlet-based version

Class Codes: C6160M (Multimedia databases); C7210N (Information networks) ; C7250N (Search engines); C6180 (User interfaces)

1/9/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

03723193 INSPEC Abstract Number: C90065460

Title: Guide to information resources of the national automated scientific and technical information system

Author(s): Bushmanov, N.F.; Zinov'eva, E.D.; Kuznetsov, B.A.

Journal: Nauchno-Tekhnicheskaya Informatsiya, Seriya 2 vol.23, no.9 p.12-15

Publication Date: 1989 Country of Publication: USSR

CODEN: NIPSBP ISSN: 0548-0027

Translated in: Automatic Documentation and Mathematical Linguistics vol.23, no.5 p.14-18

Publication Date: 1989 Country of Publication: USA

CODEN: ADMLAE ISSN: 0005-1055

U.S. Copyright Clearance Center Code: 0005-1055/89/$20.00

Language: English Document Type: Journal Paper (JP)

Treatment: Practical (P)

Abstract: The electronic guide describes the current status of information resources making up NASTIS. The characteristics of service centers and databases available through remote access are listed. An electronic guide provides users with integrated reference data on NASTIS information resources. It helps improve searching and distributed information environment and the choice of proper strategies for information services. (2 Refs)

Subfile: C

Descriptors: information retrieval systems; information services

Identifiers: information resources; electronic guide; NASTIS; service centers; databases; remote access; integrated reference data; searching;

distributed information environment; information services
  Class Codes: C7210 (Information services and centres); C7250 (
Information storage and retrieval)

1/9/3 (Item 1 from file: 202)
DIALOG(R)File 202:Information Science Abs.

00232505 9902505
ISA Document Number in Printed Publication: 9902598
   Movie directories.
Document Type: Journal Article
Author (Affiliation): Jacso, Peter (University of Hawaii, Honolulu, HI)
Country of Affiliation: United States
Journal: LINK-UP
Publication Language(s): English
Publication Country: United States
Source: Vol. 16 Issue 3 p. 3, 14-15 May 1999
        Presents a guide to free and fee-based movie directories. Reports that many of the original resources available on CD-ROM or online for a fee have succumbed to the competitive pressures brought by free Web services. Notes that many of the Web offerings provide very high quality databases with easy, user-friendly interfaces. Highlights a number of free directories. Says that All Movie Guide has 150,000 entries and offers a description of the plot in six languages. Adds that Reel contains details for 100,000 feature films and provides charts that grade movies on 14 traits. Reports that TV Guide offers a database of 35,000 movies with excellent search options and reviews from the Motion Picture Guide. Notes that the Internet Movie Database has the best features, the largest database, the most powerful search software, and the richest information.
Descriptors: Databases; Directories; Motion Pictures
Subject Class Header (Number):INFORMATION RECOGNITION AND DESCRIPTION,
    Directories (04.06)

1/9/4 (Item 1 from file: 233)
DIALOG(R)File 233:Internet & Personal Comp. Abs.

00534218 99LK05-005
  Movie directories
   Jacso, Peter
   Link-Up , May 1, 1999 , v16 n3 p3, 14-15, 3 Page(s)
   ISSN: 0739-988X
   Company Name: Amazon.com
   URL: http://www.allmovie.com http://www.reel.com http://www.tvguide.co
m/movies http://www.imdb.com
   Product Name: All Movie Guide; Reel; TV Guide; Internet Movie
Database
   Languages: English
   Document Type: Articles, News & Columns
   Geographic Location: United States
   DATABASES FREE VS. FEE-BASED column presents a guide to free and fee-based movie directories. Reports that many of the original resources available on CD-ROM or online for a fee have succumbed to the competitive

pressures brought by free Web services. Notes that many of the Web offerings provide very high quality databases with easy, user-friendly interfaces. Highlights a number of free directories. Says that All Movie Guide has 150,000 entries and offers a description of the plot in six languages. Adds that Reel contains details for 100,000 feature films and provides charts that grade movies on 14 traits. Reports that TV Guide offers a database of 35,000 movies with excellent search options and reviews from the Motion Picture Guide. Notes that the Internet Movie Database has the best features, the largest database, the most powerful search software, and the richest information. (JC)

Descriptors: Motion Pictures; Directories; Entertainment; Web Sites

Identifiers: All Movie Guide; Reel; TV Guide; Internet Movie Database ; Amazon.com

1/9/23 (Item 23 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01602876 SUPPLIER NUMBER: 13946445 (THIS IS THE FULL TEXT)
General Instruments in deal with Microsoft, Intel. (cable television converters)
Blankenhorn, Dana
Newsbytes, NEW04280010
April 29, 1993
LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 410 LINE COUNT: 00033

TEXT:

General Instruments In Deal With Microsoft, Intel 04/28/93 CHICAGO, ILLINOIS, U.S.A., 1993 APR 28 (NB) -- After weeks of speculation, General Instrument (GI) closed a deal with Intel and Microsoft to integrate 386 chips and a version of Microsoft Windows in its set-top cable TV converters. GI has about 60 percent of the set-top converter market.

At the NAB show in Las Vegas recently, General Instruments' spokesmen emphasized that no deal had been signed, but a demonstration of Modular Windows, the technology which will be put into the proposed set-top converters, was prominent at the company's booth. Microsoft spokesmen called the effect of putting a Windows interface on a TV the "power potato," meaning it empowers coach potatoes to access a variety of new services.

However, Apple chairman John Sculley dismissed the idea, saying a TV interface must "make a telephone look complex," while IBM vice president and general manager for multimedia Lucie Fjeldstad demonstrated a TV interface based on voice commands she said has a better chance of success.

GI is still going ahead, in part because digital compression from leading cable operators like Tele-Communication means they will soon be offering 500-750 channels, and standard "zapping" controls just will not be good enough for viewers. GI is a leading supplier of converters to TCI, but no contracts have been signed regarding converters on the 500-channel system.

GI said in a press statement, that the new converters will allow for such things as movies on-demand, interactive home shopping and information access, all from a viewer's easy chair. Chairman Donald Rumsfeld said the product will be available next year. "By incorporating the established infrastructure that created the PC revolution, GI will have a powerful, flexible and extremely cost- effective product that will benefit both the cable industry and the ultimate user, the cable subscriber," he said.

One of the initial third-party applications expected are on-screen electronic program guides . The first group of guides will likely help viewers search by subject matter, but they should quickly evolve to include movie previews for video-on demand services, home shopping, and enhanced music programming in which viewers can order CDs or lyric sheets while watching videos.

(Dana Blankenhorn/19930428/Press Contact: Intel, Pam Pollace, 408/765-1435; General Instrument, Jim Barthold, 215/956-6448; Microsoft, Marty Taucher, 206/882-8080)

FILE SEGMENT: NW File 649

1/9/34 (Item 5 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext

01045465 CMP ACCESSION NUMBER: NTG19950401S0050
Show Biz - Get with the program. Tune to these nine networks for the scoop on your prime-time faves. (Law & Order)
NETGUIDE, 1995, n 204, PG123
PUBLICATION DATE: 950401
JOURNAL CODE: NTG LANGUAGE: English
RECORD TYPE: Fulltext
SECTION HEADING: Cyberguide
WORD COUNT: 1597
TEXT:

Who was Captain John Francis Xavier McIntyre better known as? Why, Trapper John, of course. Followers of the legendary television show M*A*S*H-many of them active posters in the alt.tv.mash Usenet newsgroup- have gathered up M*A*S*H tidbits and trivia in The M*A*S*H Archive Internet site (ftp rtfm.mit.edu; look in the /pub/usenet/news.answers/ tv/mash subdirectory). The four files here-the newsgroup FAQ, an Episode Guide, Character List and Other Credits for cast regulars-took us for a ride in the medivac chopper. Remember ``Ronny'' Howard as an underaged soldier? Deathtrap Colonel Leslie Nielsen? They're both archived in the Guest Stars list. And each of the 251 episodes is detailed lovingly, listing writers, directors, original air dates and plot summaries.

But the FAQ provides the most entertainment here. Questions range from the sublime (``What awards did M*A*S*H receive over its illustrious 11-year span?'') to the ridiculous (``Which paintings did Colonel Potter make while at the 4077th?''). And the answers had us holding our sides in glee. We say take this virtual trip to the Swamp.

``Who was that guy who used to be on the show? Caruso or something?'' This quote sums up the feelings of most posters in the Usenet newsgroup alt.tv.nypd.blue. The action here veers from the hit- and-run variety-posters asking for e-mail plot summaries-to the stalwart cast of cruisers posting show highlights and analyzing characters as if they were real. ``I know Andy is going through a lot, but I think Sylvia deserves a little more attention and she should tell him about it,'' states one poster. There's also a great deal of matchmaking here: ``Dead bankers' daughters aside, Martinez and Lesniak make a cute pair. Let's hope they drag this out.'' Topics take all kinds of turns, from ``Andy and AA'' to ``Medavoy Sighting'' to ``Police Politics.'' But all roads eventually lead back to the naked, rather than the damned: One fan offers voting instructions (for an unrelated topic) with this qualifier: ``If you were relieved that they killed off the Peter Boyle character before he had to do a nude scene '' While John Kelly may be history-``From Smits, through the writers, the director and the guy who played Webster-they all served to make one forget Our Hero''-the alt.tv.nypd.blue newsgroup is well worth remembering.

We're mad about it-Mad About You, that is, the popular NBC television show about two newlyweds in the '90s. The Usenet newsgroup alt.tv.mad-about-you is equally worthy of adoration. We've been accused of scheduling our social lives around each episode, but thanks to the extensive Episode Guide and FAQ files-posted regularly to the newsgroup-we've managed to fill in gaps left by pesky things like dinner invitations and volleyball games. Want to figure out whatever happened to Selby? Can't remember what Paul and Jamie did on their third date? It's all here, in minute detail. The newsgroup itself? Well, it's a little

scattered-we noted discussions of Friends, Frasier , ER and Seinfeld all creeping in, countered by those who want to keep the Helen Hunt worship on track. But we think alt.tv.mad-about-you is worth wading through to get up-to-date summaries of the latest episode or to kibitz about plot developments.

Selby? The character was written out of the series after the 12th episode-``rumors that he joined the Peace Corps are unfounded.''

World-Wide Web browsers: Set a course for the Star Trek: Voyager WWW site. Visitors to the U.S.S. Voyager (http://voyager.paramount.com) are welcomed by The Doctor, ``a holographic emergency medical program devised by Starfleet,'' and encouraged to step into an alternate world as Voyager crew members. So we browsed through the PADD (Personal Access Display Device) graphic-an on-screen replication of a handheld personal digital assistant-to find out about the crew and its recent encounters, presumably before lining up for evaluation and reinstatement to active duty. From the sound clips by Captain Kathryn Janeway (Kate Mulgrew) and The Doctor (Robert Picardo) to the History files detailing relevant facts, the goal here is to get a new generation of viewers hooked on this latest incarnation in the Star Trek legacy. And we took the bait, claiming our place as an Honorary Member of the Voyager crew after an all-too-brief quiz. While the graphics files could use a little trimming back and the character sketches need a little fleshing out, the U.S.S. Voyager is off on a fine maiden journey. We'll beam aboard this site on a regular basis.

Do you tear up your entire house looking for a lost remote control before you'll turn the TV on manually? Then you might find some nominal value in the TV Source site on America Online (keyword tv source), billed as ``your electronic gateway into the world of television.'' That is, if you'd rather walk over to the computer, log onto an online service and search to see what time Home Improvement is on instead of, say, looking it up in TV Guide .

Searching the ``vast TMS (Tribune Media Services) database of 37 networks and superstations,'' split out into regional subsections, was less than illuminating. Program descriptions were terse-``Roseanne's meddling in Becky's marital woes angers Dan''-or non-existent. Program times were listed incorrectly-neither of the two PBS stations in the New York area shows Sesame Street at 9 a.m., for example. And while the ability to search for an actor starring in shows for the current week seemed intriguing, a search for John Goodman netted one cable movie, one Storytime episode-and no Roseanne. So what's the point of clicking around online for something that works perfectly well in print?

Yep, we ``got a problem with it''-and we think Andy Sipowicz just might, too. What is ``it''? The NYPD Blue folder in ABC's Prime Time section on America Online (keyword abc prime time). With a profile that prominently bills long-departed brooding cop John Kelly and fewer than 30 messages posted to the NYPD Blue topic in the accompanying Tube Talk message board, this site is colder than a week-old corpse. Sure, there are profiles of eight top cast members-from Jimmy Smits to the aforementioned David Caruso-and the weekly previews are a nice touch, but there's no new evidence here that can't be uncovered from a variety of other sources, both print and electronic.

Wondering why Beverly Hills 90210 frat boys have been trolling Delphi, of all places, for dates? Fox Television, the network that brings you classics such as Married With Children, The Simpsons, The X Files and Melrose Place, happens to be owned by Rupert Murdoch, the man behind the scenes at Delphi. So FOXtalk (go ent fox) should be overflowing with all the buzz on your favorite shows, right? Wrong. The databases and message boards are both as empty as the Peach Pit on a bad night-what, no photos

of Heather Locklear?-while the episode summaries provide unintentional hilarity. From one Beverly Hills 90210 summary: ``Brandon gives thanks that Dylan is still alive to sweat with him.''

High points? Well, Fox network executives drop by the message boards to explain the rationale behind adding a laugh track to the HBO transplant Dream On, for example-and later acknowledge that the whole concept was, uh, canned. That concept could easily be applied to FOXtalk as a whole. Judging from the lack of audience participation here, the ratings have to be abysmal. Or as Homer Simpson would say, ``D'oh!''

We admit it-we're suckers for television criticism. We'll read endless articles about shows we've already watched, and compare reviews for shows we'll never watch. So we tuned in to the Channel Surfin' USA section of the Tube Talk site on eWorld (shortcut tube talk) for some additional dirt. This site is full of information from Tribune Media Services' print publications, separated into two sections: Channel Surfin' News and Channel Surfin' Reviews. Unfortunately, some of this stuff should be long gone-articles such as Halloween TV Listings belong in a trash bin. And we've griped before about TMS' habit of stuffing a mishmash of articles in one big heap for us to sort through. But hey-patient types will be rewarded with some interesting nuggets. We were thrilled to see Mike Duffy's byline on a few articles here, for starters. Duffy, The Detroit Free Press' television guru whose prose has dazzled us for years, even managed to drag us into yet another rehash of the Scarlett fiasco: ``In an expensive, high-gloss soap opera such as this, filmed on location in England, Ireland and Charleston, S.C., the fickle fates should be twirling and the cheap thrills swirling. Instead, we're often stuck in the big-budget slumber zone.'' While it takes time to dig out the first-run features here, at least we're not using that time to watch Love Connection. As Martha Stewart says in those American Express commercials, ``That's a good thing.''

He signs off as ``The Prodigy TV Guy,'' but columnist Jefferson Graham isn't just another opinionated poster. Graham covers television for USA Today and has authored three books, among them the upcoming As Seen On TV. He airs his own views and tells about upcoming TV changes in the TV News and Views news section (jump tv news) on Prodigy. TV News and Views is a twice-weekly electronic column that's worth tuning into. Graham presents the scoop on the network going-ons in a crisp, concise manner. He also makes appearances in the Jefferson Graham topic in the TV Bulletin Board, where posters can ask about favorite characters or disagree with his reviews. He isn't afraid to pull punches: ``Can you remember a crop of new shows worse than the new WB (Warner Brothers) network had to offer? What were they thinking?'' We think Graham is great.

01527654 SUPPLIER NUMBER: 12414580 (THIS IS THE FULL TEXT)
Interactive TV arrives: ready or not, cable companies move ahead.
(Sessions; Seybold Digital World '92 conference)
Caruso, Denise
Digital Media, v2, n2, p20(4)
July 22, 1992
ISSN: 1056-7038 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 2183 LINE COUNT: 00167

TEXT:

Ready or not, cable companies move ahead

Of all the new technologies, digital interactive television is probably the easiest for the consumer to grasp and has the most immediate potential for acceptance. It is also the most difficult to achieve, given that today's broadcast and cable systems are set up for one-way, highly noninteractive, "spoon-feed and swallow" program consumption, and that the digital video-compression technologies that serve as its foundation are still emerging.

But the "Interactive Television" panelists at Digital World are convinced the old TV model will lose its grip as interactive TV systems move out of the "test bed" stage and are designed and implemented nationwide.

Best known to date is the Time Warner, 150-channel system that's being set up in Queens, NY. At Digital World, Viacom International president Ed Horowitz outlined Viacom's plan for a one-gigahertz, fiber-optic-based, two-way cable network that's being installed in Castro Valley, CA, a bedroom community near San Francisco. And phone company GTE'S "home of the future" project is continuing to investigate and make new I-TV services available to its fiber-wired customers in Cerritos, CA.

A variety of different applications fit under the "interactive TV" umbrella. Today, a rudimentary form of interactive TV - the use of a telephone in conjunction with programming - is already quite lucrative (see Vol. 1, No. 12, p. 6). But the vision that these panelists have of I-TV is far more sophisticated, at least technically, than dialing a 900-number to have a fake diamond ring or a "golden oldies" compact disc delivered to the consumer's door.

Offering a package
of interactive services

Diana Gagnon Hawkins of Interactive Associates, a longtime interactive television expert, says the critical component to I-TV's success is to provide viewers with the most variety possible.

That's because they aren't about to pay extra for a new set-top box - "a very big expenditure" for the cable provider, said Hawkins - that just gives them one new service. A new, digitally capable box has to provide a platform for a number of different applications and revenue streams.

Today, the big winner would be pay-per-view movies, also known as "video on demand." The I-TV metaphor also allows for an entire new range of services supporting pay-per-view.

This new "home cinema" will absolutely require "smart-search" features - vital when hundreds of movies are being delivered across a mind-boggling 150 channels. Smart-search features can help viewers find movies by subject, favorite actor or director, or just about any other

criteria, as well as provide canned reviews by Siskel and Ebert or their functional equivalents.

Couch potatoing
raised to fine art

Such services would raise "couch potatoing" to a fine art. Anyone familiar with computers can easily imagine asking a database for all the movies released within the last six months that earned the highest possible reviews from their critics of choice. Next they would select a film from the list and have it piped immediately down the cable to their TV without setting foot inside a video rental store.

It's already possible to link such a service to a favorite pizza parlor or other "we deliver" restaurant, and order dinner at the same time as the movie is ordered. How about requesting that the movie begin 15 minutes after dinner arrives to allow enough time to give the guy a tip and get back to the sofa?

In the same way, an intelligent TV guide win guide viewers through regular cable television programming. Searches by actor, calendar, time slot, etc., will help TV-watching become a custom, selectable experience.

In addition, says Hawkins, TV shopping will be much more advanced than what the Home Shopping Network can offer today. Clothes, music, cosmetics and other personal items win be available via simple onscreen selections, presented to viewers based on their personal profiles.

"Pay-per-play" video games are likely to come down the pipe, as well as new versions of "Jeopardy" and golf, and even music videos (pick your camera angle). It's this variety that will sell viewers on I-TV, says Hawkins, not one hit application, even movies. Waiting for a hit is" crazy. What is the one TV show that makes television a success?" she asks. "It depends on who you ask."

Stop talking technology

Mark Dillon of GTE Imagitrek, a division of GTE Corp. in Carlsbad, CA, devoted to tracking and implementing new technologies, says I-TV is the "most exciting application I've worked on in the past year." And it is applications, not technology, where Dillon believes energy should be focused.

So Imagitrek, which has worked on such pioneering applications as the Verbum Interactive CD-ROM-based magazine, asked Philips to beef up its CD-I multimedia player to serve as a special platform for interactive TV applications.

No baseball cards. Instead of making a prototypical baseball application, GTE started working with a "Discovery"-type channel concept that provides access to interactive articles from the World Book encyclopedia.

The CD-I box is hooked to the TV and "knows" what you're watching. Select a button on the screen that controls a screen overlay and more information will become available, spun off the DC-I disc onto the TV screen.

He believes such a system may "dull [viewers'] addiction to the remote by adding value," though some questioners - including Viacom's Horowitz - state bluntly that the insertion of video overlays in the home is a violation of copyrights.

Real-time market research. Dillon says the service will be installed after October 1, 1992, in Cerritos, CA, site of GTE'S fiber-optic-wired "home of the future" project. No decisions have yet been made as to whether cable companies will provide the beefed up CD-I box to consumers or whether the consumers would have to buy it themselves. An informal audience poll showed that only one-third of Digital World attendees would pay $500 for

such a box, half would pay $250, but almost everyone would pay $10 a month for it.

'TV with a steering wheel'

Viacom's Horowitz made it clear that, as an have suspected, cable has wasted no time developing and implementing its own view of interactive TV. The wholeness of his vision, especially his plans for Viacom's Castro Valley fiber site, signals a sea change in the state of the art. He calls it "TV with a steering wheel."

Creating the package. There are, however, some significant gating factors to widespread adoption of I-TV. So far, says Horowitz, the industry hasn't been very successful at coming up with authoring tools that allow the creative community to "push the envelope" on TV programming (certainly a viewpoint echoed by many of the artists who attended Digital World this year).

What Viacom needs, he says, are tools that go beyond the "thermonuclear war" between Apple, IBM and Microsoft and work on all authoring platforms.

Another mind shift must occur in the "package creation" side of the business. I-TV poses an entirely new paradigm for package creators who are accustomed to one massive problem set, that of coming up with a "package" of 24 hours of programming per day" Packaging interactive services will be an enormously difficult and expensive process," he says. It will require conceptualizing not "single-cartridge, single-user" applications, but as Diana Hawkins suggested, a continuum of services.

Moving the package. Delivering I-TV requires "a long-distance transportation company," as well as transition to a regional transport company. There are presently no standards, though as phone and cable systems become more interoperable, says Horowitz, some thought should be given to whether the same protocols should be used to get to the local cable system as are used for longdistance transport.

What Viacom wants is a standard transport system onto which it can hook different kinds of specialized services. Although it's interesting to think of compression as a kind of standard network application, Horowitz says that a standard compression algorithm for digital video may be what pushes I-TV over the top.

"Then the ability to invite new players into the box or switch business exists for the cable community," he says. "Up until now, we haven't done a very good job of working with the consumer electronics business and we've done nothing with the phone company. In the next 12 to 24 months, a digital transportation standard will be established, and we'll be able to harness the benefits of digital transmission within the telecommunications or the telephone industry."

Competing with the telcos. Still, there must be a physical medium to transport digital video, and replacing today's coaxial cable trunk lines (the lines into the home) with fiber "opens up a new world," says Horowitz. A gigahertz of bandwidth, which is what fiber can provide, can deliver 150 analog channels, or more than 600 digitally compressed channels, to 500 homes.

Horowitz also clearly sees cable moving beyond its role as a television provider. In recent conversations with chairmen Bill Gates of Microsoft and John Sculley of Apple Computer, he asked them why they continued to design networks to work with the phone system - capable of 56 kilobits of speed - when they could get 10 megabits with cable, a way to achieve direct connectivity without incurring the expense of a phone call.

They've got it covered

Viacom obviously intends to cover all facets of the I-TV market like a blanket. A new multifunction consumer device or set-top converter, first

mentioned by Imagitrek's Dillon, is something Viacom is now trying to define. It will connect with a VCR, tell consumers what's on TV, hook to a computer, and include telecommunications capabilities.

In addition, Viacom intends to be a leading producer and distributor of interactive entertainment, via its "creative work force, programming trademarks, audience access and ongoing capital investment in programming" such as MTV and Nickelodeon, its animation and movie libraries and other enterprises. It already controls "enough [satellite] capacity to do anything people would ever dream of, and owns a giant cable operation as well as radio stations.

Viacom has also converted its Castro Valley cable system into a tabula rasa - "an environment where technology isn't the limiting factor" - where 17,500 homes are connected to a gigahertz, two-way network with so much extra bandwidth that Horowitz says some of the fibers may be used for telephone services.

In addition, Viacom will offer network nodes to outside companies such as IBM, Apple and Microsoft. "We'll help subsidize the cost of their ideas," Horowitz says.

Such a system is a perfect place for Viacom to do market research. Pay-per-view is a no-brainer, as is an electronic program guide. Horowitz is fairly certain that consumers won't pay for anything that's more expensive than a VCR, around $350 retail, but doesn't know whether the company will offer it as a subsidized purchase or a monthly rental. "Five hundred dollars is way too expensive if you want a broadly distributed consumer service," he says.

How desperate are we?

Horowitz closed his talk by saying that I-TV is all about entertainment, whether what's being piped into the home is information or movies. "It had better be fun or they won't use it," he says.

It's easy for anyone to see the truth in that statement, but still there is something disquieting about the seemingly universal need to make everything "fun" for consumers. In addition, I-TV poses a number of serious privacy concerns that no I-TV supporter, anywhere, at any time, volunteers to address. Is it just assumed that because someone has an interactive system in his home, he is agreeing to a carte blanche surveillance of his viewing, shopping, and gaming habits? If the cable system is indeed enabled as a telephone, will there be regulatory restraints in place that keep cable operators and advertisers from watching and recording whom he calls?

Certainly the concept of interactive TV is a powerful and exciting one, and many hold out great hope that it can resurrect the dying institution of television. But as large, influential companies like Viacom move forward with I-TV,j industry and consumers alike must make sure that I-TV doesn't create a scenario even more insidious in its own way than what the passive, couch-potato model hath wrought until now. We cannot be that desperate.

COMPANY NAMES: Viacom Cable--Planning
DESCRIPTORS: Seybold Digital World; Trade Show; Conferences and Meetings; Presentations; Television; Interactive Cable; Cable Television; Strategic Planning; Product Development
SIC CODES: 4841 Cable and other pay TV services
FILE SEGMENT: CD File 275

Search History for ecolbert

File		Status	Query	Database	Hits	Time
☐	21		epg	PCT.vdb	47	07.02.2001 19:54:14
☐	18		"epg or electronic programming guide	PCT.vdb	0	07.02.2001 19:38:45

Delete Entries | Mark Entries: Save | Mark Entries: Update | Update Marked Entries

Marking an entry already marked *Save* or *Update* will remove the mark for that entry.

[Search Summary]

Results of searching in PCT.vdb for:

"**epg**: 47 records

Showing records 1 *to* 25 *of* 47 :

Final 22 records | Start At

Refine Search "epg

Title

1. **(WO 01/03426)** DBS FEATURE EXTENSION ARCHITECTURE
2. **(WO 01/03425)** METHOD AND APPARATUS FOR CAPTURING BROADCAST ***EPG*** DATA FOR PROGRAM TITLE DISPLAY
3. **(WO 01/01678)** SYSTEM AND METHOD FOR UTILIZING ***EPG*** DATABASE FOR MODIFYING ADVERTISEMENTS
4. **(WO 00/59213)** DECIMATION METHOD FOR PROVIDING PIG WINDOWS
5. **(WO 00/56067)** APPLICATION PROGRAM INTERFACES FOR ELECTRONIC PROGRAM GUIDE DATA SERVICES
6. **(WO 00/56066)** SYSTEMS AND METHODS FOR ELECTRONIC PROGRAM GUIDE DATA SERVICES
7. **(WO 00/56065)** SYSTEM AND METHOD OF CHANNEL MAP CORRECTION IN AN ***EPG***
8. **(WO 00/52928)** SYSTEM AND METHOD FOR ELIMINATING REDUNDANT LISTINGS IN AN ELECTRONIC PROGRAM GUIDE
9. **(WO 00/40027)** USER GROUP IDENTIFICATION SYSTEM
10. **(WO 00/40017)** SYSTEM AND METHOD OF DEFAULT CHANNEL LINEUP AND DISPLAY WITH CUSTOMIZATION OF ELECTRONIC PROGRAM GUIDE GRIDS
11. **(WO 00/40016)** METHOD OF DATA DISPLAY FOR ELECTRONIC PROGRAM GUIDES
12. **(WO 00/40012)** APPARATUS FOR RECEIVING PROGRAMS
13. **(WO 00/38418)** METHOD AND SYSTEM FOR PROVIDING A LINK TO PROGRAMS IN A PROGRAM GUIDE
14. **(WO 00/35197)** TELEVISION RECEIVER WITH MULTIPAGE TELETEXT DECODER USING A PRIORITY SCHEME
15. **(WO 00/33576)** SYSTEM AND METHOD FOR PROVIDING NEWS, SPORTS, AND LOCAL GUIDE SERVICES THROUGH AN ELECTRONIC PROGRAM GUIDE
16. **(WO 00/24195)** HTML ELECTRONIC PROGRAM GUIDE FOR AN MPEG DIGITAL TV SYSTEM
17. **(WO 00/22818)** METHOD AND APPARATUS FOR SELECTIVELY SUPPLYING ADVERTISING MESSAGES TO VIEWER TERMINALS
18. **(WO 00/21287)** METHOD AND APPARATUS FOR SUPPLYING VIDEO

CLIPS TO VIEWER TERMINALS

19. **(WO 00/21286)** ***EPG*** INFORMATION DISPLAY METHOD, ***EPG*** INFORMATION DISPLAY DEVICE, VIDEO RECORDING/REPRODUCING DEVICE, AND PROGRAM
20. **(WO 00/01141)** TERMINAL POWERED ON FOR ***EPG*** DOWNLOAD
21. **(WO 99/63752)** INFORMATION PROCESSING APPARATUS AND METHOD, AND PROVIDING MEDIUM
22. **(WO 99/60782)** ***EPG*** AND ADVERTISEMENT ON A REMOTE CONTROL DISPLAY
23. **(WO 99/53688)** A TV RECEIVER WITH AN ELECTRONIC PROGRAM GUIDE (***EPG***)
24. **(WO 99/48287)** GRAPHICAL DISPLAY OF CURRENT TIME ON ELECTRONIC PROGRAM GUIDE
25. **(WO 99/38322)** PICTURE-IN-GUIDE GENERATOR

Final 22 records Start At

Search Summary

epg: 287 occurrences in 47 records.

Search Time: 0.17 seconds.

[Search Summary]

Results of searching in PCT.vdb for:

"**epg**: 47 records

Showing records 26 *to* 47 *of* 47 :

First 25 records | Start At

Refine Search "epg

Title

26. **(WO 99/38321)** HOME ENTERTAINMENT SYSTEM AND METHOD OF ITS OPERATION
27. **(WO 99/37090)** PROGRAM SELECTING DEVICE AND PROGRAM SELECTING METHOD
28. **(WO 99/35849)** SYSTEM FOR COMBINING ELECTRONIC PROGRAM GUIDE DATA
29. **(WO 99/35847)** METHOD AND INTERFACE FOR LINKING TERMS IN AN ELECTRONIC MESSAGE TO PROGRAM INFORMATION
30. **(WO 99/30492)** ***EPG*** WITH ALPHA SORTING FEATURE
31. **(WO 99/29109)** ELECTRONIC PROGRAM GUIDE SYSTEM WITH ADVERTISING MESSAGES IN POP-UPS
32. **(WO 99/12333)** VIDEO RECORDER
33. **(WO 99/11059)** RECEIVER, PROGRAM RETRIEVAL METHOD, AND RECEIVING METHOD
34. **(WO 99/04561)** SYSTEMS AND METHODS FOR DISPLAYING AND RECORDING CONTROL INTERFACES
35. **(WO 98/57497)** METHOD OF CONTROLLING RECEPTION IN DATA BROADCAST RECEIVER
36. **(WO 98/43419)** PICTURE IN AN ELECTRONIC PROGRAM GUIDE FOR A VIDEO PROCESSING SYSTEM
37. **(WO 98/42129)** HD TO SD GUIDE CONVERTER FOR ELECTRONIC TELEVISION SCHEDULE SYSTEM
38. **(WO 98/38796)** DIGITAL TELEVISION RECEIVER
39. **(WO 98/27723)** ***EPG*** WITH ADVERTISING INSERTS
40. **(WO 98/16062)** TALKING REMOTE CONTROL WITH DISPLAY
41. **(WO 97/46006)** PROGRAM GUIDE CONTROLLER
42. **(WO 97/34414)** METHOD AND APPARATUS FOR DISPLAYING TELEVISION PROGRAMS AND RELATED TEXT
43. **(WO 97/34413)** COMBINATION OF VCR INDEX AND ***EPG***
44. **(WO 97/18670)** ELECTRONIC PROGRAM GUIDE WITH ENHANCED PRESENTATION
45. **(WO 97/12485)** METHOD AND DEVICE FOR TRANSMITTING AND RECEIVING TELETEXT PAGES

46. **(WO 97/12484)** METHOD AND DEVICE FOR TRANSMITTING AND RECEIVING TELETEXT DATA
47. **(WO 97/04746)** METHODS OF MAKING LIPOSOMES CONTAINING HYDRO-MONOBENZOPORPHYRIN PHOTOSENSITIZERS

First 25 records | Start At

Search Summary

epg: 287 occurrences in 47 records.

Search Time: 0.17 seconds.

Virtual channel: dynamic structuring and continuous que data on the air

- *Sumiya, K.; Tanaka, K.*
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Abstract:
This paper proposes a restructuring method for data via digital video satellite broadcasting systems. The research is motivated by development of the EPG (e television program guide) system for browsing through the content of a few hu channels. It is not possible for users to check each piece of data all the time. W a new approach to reorganize the EPG data for retrieving the desired television information instead of a system-defined EPG.

Index Terms:
direct broadcasting by satellite; dynamic structuring; continuous queries; virtu data restructuring method; digital video satellite broadcasting systems; electro television program guide; television program information retrieval

Virtual Channel: Dynamic Structuring and Continuous Queries for Data on the Air

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Abstract

This paper proposes a restructuring method for data via digital video satellite broadcasting systems. The research is motivated by development of EPG (electronic television program guide) system for browsing through the content of a few hundred channels. It is not possible for users to check each piece of data all the time. We propose a new approach to reorganize the EPG data for retrieving the desired television program information instead of system-defined EPG.

1 Introduction

Recently, in television broadcasting, digital video satellite broadcasting systems are starting to be used, in addition to terrestrial broadcasting systems and cable television systems[1]. Most digital video satellite systems have been developed in the MPEG2 format[2], in which they send audio and video data. As audio and video data are extremely compressed with MPEG2, dozens or hundreds of channels can be broadcast simultaneously.

This paper proposes a restructuring method for data via digital video satellite broadcasting systems. The research is motivated by development of EPG (electronic television program guide) system for browsing through the content of a few hundred channels[3].

In digital video satellite broadcasting systems, the EPG data contains information of upcoming television programs for a certain period. Also, it is transmitted periodically at the rate of several times per second in a cyclic manner. Users may become annoyed when searching for their favorite programs among the large number of channels available. It is not possible for users to check each piece of data all the time; therefore it is necessary to provide individually defined views for each user.

We propose a new approach to reorganize the EPG data for retrieving the desired television program information instead of system-defined EPG.

The remainder of this paper is divided as follows: Section 2 describes concept of the proposed system. Section 3 gives the data structure of EPG. Section 4 describes the query mechanism and restructuring method. Section 5 discusses related works. Section 6 summarizes our results and suggests our future plan.

2 Concept of Virtual Channel

2.1 EPG: Electronic Program Guide

The EPG data is ancillary information about the television programs in an ordinary data stream format, including their title, schedule, genre, summary, still images, and so on. In other words, this data is a digital version of the television program lists one can find in daily newspapers or magazines. Figure 1 shows an EPG service.

The EPG data is regarded as unstructured data, or rather, semi-structured data, even if it is completely defined as a set of tagged records. The reason is that it is not possible to specify which tag contains the desired value - that is: a certain value is contained in different tags from place to place.

In this research, we regard a lot of received data via broadcasting system as a client receiving data from a server database. It is necessary to provide individual views for users, to search for information among a large mass of data. To realize this method, we introduce a hyperlink mechanism. The hyperlink mecha-

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nism: creates links between anchors and destinations and navigatcs between them mutually. Then, there are two problems from the nature of the matter:

- broadcasting data is temporal data (not persistent data)
- hyperlinks are incomplete because of not yet received data or expired data

2.2 Dynamic Structuring and Continuous Queries

We designed a new EPG system for retrieving the desired television program information instead of system defined EPG. We call this method VCH (Virtual Channel). The idea is as follows:

- Queries for semi-structured data are executed continuously when new EPG data arrives.
- Retrieved results are restructured into a sequence of programs of a virtual channel.
- Each program in a virtual channel is associated with alternative programs or semantically related programs by the notion of "navigation by queries". That is, hyperlink anchors and destinations are dynamically generated by executing predefined queries.

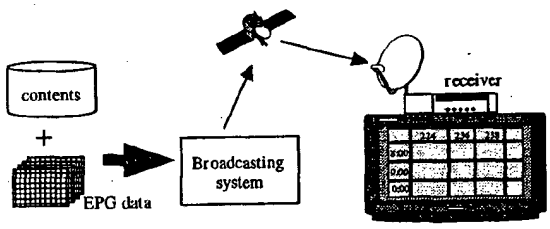

Figure 1: EPG service

We provide a query language specially designed for the EPG. User-defined queries which "select all programs that a certain movie star will appear in" or "select all of a certain drama series" are executed periodically as a permanent query, whenever new EPG data arrives from a server. There are several continuous query mechanisms being proposed but they can not cope with real-time values, so they can not deal with queries such as "select top ten programs based on audience rating at present". VCH solves this problem by adapting a real-time query mechanism.

The results of user-defined queries are restructured in a chronological order, solving the conflict of their broadcast schedules by a priority check. If a retrieved program has rebroadcast programs, structure-based links are bound among them. By structure-based we mean "schedule-based" links in this sense.

In the retrieved programs, all the same strings in several programs are dynamically related using hyperlinks called content-based links. For example, a movie star's name is an anchor point to other programs which includes the name. Actually, content-based links are generated by dynamic queries when users point at the anchor. Users can traverse programs and find the desired programs according to the details of a program. In VCH, content-based links are used for not only the same strings but also associated strings.

3 Preliminaries

3.1 Supposed EPG Information

Supposed EPG data in this paper consists as follows:

1. program identifier (id)
2. series (list)
3. channel number (numeric)
4. title (string)
5. genre (code)
6. start_time (numeric)
7. program_time (numeric)
8. summary (character)
9. cast (string list)
10. rate (numeric)

A program id is an identifier of a program. A series list includes program lists which are the same program series. A channel number is the numeric number of the channel and a title is the string of a program title. A genre is a classification code which the program belongs to. Although a genre is divided into major genre and minor genre usually, minor genre is not considered for simplifying. So, genre is, for example, movie, drama, sports, and so on. A start_time is the time which the program starts and program_time is the period of the program. A summary is an outline or related information of the program, in which structured tags can be used.

A cast is a list of the performers of the program. A rate is an audience rating[1]. In recent broadcasting systems, cast and rate are not supported. In addition

[1]There are many definitions for audience ratings. In this paper, any definition is available.

to the character data showed above, still image, video image, audio data can be transmitted for EPG data. In this paper, only character data is regarded as EPG data.

EPG data contains information of upcoming television programs for a certain period. In this paper, we set the period as two weeks from the present.

3.2 Data Structure of EPG

For discussion, we apply an object model to EPG data. It can be used for other models, for example the relational model. We do not restrict the model. From now, we call the program an *object*.

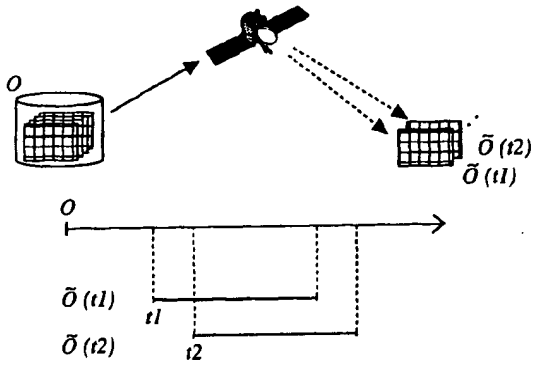

Figure 2: EPG Information

An object is defined as a tuple $o(t) = (i, v(t), o_{sub})$.

- i is an object identifier(oid).
- $v(t)$ is a tuple of attributes $[a_1 : v_1(t), \ldots, a_n : v_n(t)]$ at time t.
- o_{sub} is a set of the sub-object oids included the object $o(t)$.

Objects which include sub-objects are called super-objects. Intuitively, a sub-object is an item in a program. For example, a news item is a sub-object in a new program. As class definitions are described based on program information, it is general to determine the class with *genre*. However, we do not determine the class definitions and class hierarchies. We should notice that attribute values are not always constants[2](for example, rate, cast, start_time, and so on).

[2]All attribute values are not variable. For example, title and genre are not changed.

All objects which exist on a server (a broadcasting system) are described as $\mathcal{O} = \{o_1, \ldots, o_n, \ldots\}$. If there were objects with attribute values exactly the same in $\mathcal{O}$, for instance rebroadcast programs, they would be regarded as respective and have a different *oid*.

The EPG data at time t is defined with function *broadcast*$(\mathcal{O}, t)$ and described as $\tilde{\mathcal{O}}(t)$, which contains information of upcoming television programs for two weeks from time t.

$\tilde{\mathcal{O}}(t)$ is all program information which is transmitted at time t and also all program information which is received by a receiver at time t. Figure 2 shows EPG data transmission between a server and a receiver.

4 Virtual Channel

4.1 Query Language

In this section, we describe the structure of the query language. Syntax of the language is constructed by specifying an object and giving conditions. Although it is like SQL, we do not restrict the syntax.

The query expression is constructed by three clauses: `select`, `where` and `execute`. A `select` clause is mandatory, but others are not. A `select` clause specifies the desired object. In a `select` clause, the desired object is specified. In a `where` clause, conditions are specified and time conditions are also specified. An `execute` clause specifies if the query is executed only one time or continuously. If `continuously` is specified, the query will be executed from that time.

4.1.1 Specifying the Object

Example 1:

Let us consider the following simple example:

```
select :   $x
where :    ($x.genre = "Free" and
            $x.title = "The X Files")
```

This query means that "select all programs which have the genre *Free* and the title is *The X Files*". Of course, the scope of this query is $\tilde{\mathcal{O}}(t)$, when it executes time t. As *time_condition* is not specified in this example, the query will execute once at time t.

Query Expression:

< *query* > ::= < select_*clause* > [< where_*clause* >][< execute_*clause* >]

< select_*clause* > ::= select < *expression* >
< where_*clause* > ::= where < *condition* >
< *condition* > ::= < *expression* > [< *time_condition* >]
< *time_condition* > ::= when < *value* > | last < *value* >
< execute_*clause* > ::= execute *now* | execute *continuously*

Example 2:

Next, we will show the granularity specification. The following example means that "find all programs with the genre *News* and the summary including *HongKong*. If the object is a sub-object, select all the objects one level higher". We specify $\$\dot{x}$ instead of $\$x$ to selcct sub-objects.

select : $\$\dot{x}$
where : ($\$\dot{x}.genre = "News"$
and $\$\dot{x}.summary \ni "HongKong"$)

A $\$\dot{x}.attribute$ matches the attributes in any sub-object level. This is, it is not necessary to specify the level.

Example 3:

The granularity specification has two kinds of forms. One is absolute specification, the other is relative specification. The above examples are absolute specifications. The following example shows a relative specification.

select : $\$\dot{x}/../*$
where : ($\$\dot{x}.genre = "News"$
and $\$\dot{x}.summary \ni "HongKong"$)

This query means that "find all programs that the genre is *News* and the summary includes *HongKong*. If the object is a sub-object, select all the objects which is the one level upper relatively. The specification is like UNIX file-directory path expression.

4.1.2 Time Condition

In this section, we will explain the specification of the time condition.

Example 4:

This example means that "select all whose channel is 123 and the rates more than 10% for the past one week".

select : $\$x$
where : $\$x.rate >= 10$ and
$\$x.channel = 123$ last (1 *week*)

The time_condition when and last are regarded as as_of clause in temporal databases[4].

4.1.3 Continuous Queries

The queries are executed once, as we have mentioned before. In addition, we can execute the queries continuously. By this mechanism, we can execute the query for upcoming data. Let us consider the program reservation of "The World Series" of baseball games. The World Series has 7 games at maximum and 4 games at minimum according of the game results. We can not reserve all the games before the first game starts. However, this mechanism can provide a way: specify the query once, and it will be executed automatically as the series is held.

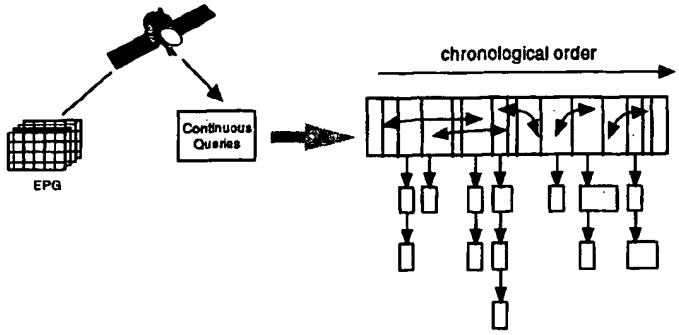

Figure 3: Virtual Channel

Example 5:

This example means that "select all program with the title is *The World Series* and execute it continuously"

```
select :    $x
where :     $x.title = "The World Series"
execute :   continuously
```

If there is no **execute** clause in a query, the query executed only once, which is default.

4.2 Dynamic Structuring

The objects retrieved by queries, as we have seen in the above section, are dynamically structured. In VCH, there are two kinds of links in objects: *content-based link* and *structure-based link*. The *content-based link* is a link from an attribute value to attribute values in other objects. For example, "same-cast link" is generated between a certain movie star's name in an object and another object which includes the same name. This link is defined with same values, related values, or derived values. The *structure-based link* is generated among objects with broadcast schedules are "related" which. Figure 3 shows the image of the VCH: horizontal links are content-based links and vertical links are structure-based links.

The proposed link mechanism is based on hyperlink structure. Hyperlinks are classified into two types: static link and dynamic link. In static links, the anchors and the destinations are fixed. On the other hand, dynamic links become dynamic and are maintained automatically[5].

4.2.1 Content-based Link

A content-based link is defined as a tuple below:

$$\mathcal{L}_C = (\{S.a_i\}, \{T.a_j\}, \{conditions\})$$

- $S.a_i$ and $T.a_j$ are source and target anchor attributes respectively.
- *conditions* is relationship between $S.a_i$ and $T.a_j$.

The following example shows a specification of content-links. $\mathcal{L}_{C1}$ means "generate links among same cast. In the same way, generate links among same genre. And generate links from a cast to summary which includes the cast".

$$\begin{aligned}\mathcal{L}_{C_1} = \; & (\{S.cast\}, \{T.cast\}, \{S.cast = T.cast\}), \\ & (\{S.genre\}, \{T.genre\}, \{S.genre = T.genre\}), \\ & (\{S.cast\}, \{T.summary\}, \{S.cast \in T.summary\})\end{aligned}$$

Content-based links are useful for users to traverse the EPG information in a navigational manner.

4.2.2 Structure-based Link

Another link in VCH is a structure-based link. A structure-based link is defined below:

$$\mathcal{L}_S = o_i \; \theta \; o_j$$

- o_i and o_j are source and target object respectivcly.
- θ is a relation of objects: *equals, before, during, overlaps, meets, starts and finishes.*

Structure-based links mean the relationship among objects. The relations of objects are temporal intervals defined in [6]. For example, when users specify an object, they can find the related objects based on the program schedule: objects with exactly the same schedule, objects starting after the previous object finishes, and so on. Users can detect the conflict among them and browse their favorite programs.

4.2.3 Browsing the Virtual Channel

Users can navigate the VCH by a browser and choose the programs using two kinds of links. The browser is now under development.

5 Related Works

Hypermedia technology has been developed to store and represent various kinds of information and relationships between information nodes. A new type of hypermedia, live hypermedia, has been proposed[7]. Live hypermedia can acquire a desired set of video scenes from television broadcasting programs using the video scene recognition techniques.

On the other hand, VCH is based on the additional text information of programs, not using video recognition. Generally, the recognition rate of text information is greater than video recognition. The two methods, however, are not always contrary and rather should be complemented.

For electronic documents which arrive and are never removed, for example electronic mail and news, a continuous query mechanism has been proposed[8]. In VCH, we provided the restructuring technique of electronic documents.

6 Concluding Remarks

VCH is a dynamically generated sequence of programs in a chronological order, where: (1) each program is a retrieved result extracted from several channels by our continuous query mechanism, (2) a program can bind embedded structural links to similar or equivalent programs regardless of their broadcast schedules, (3) an attribute in a program can have connections with other associated programs via content-based links.

We have just studied the concept of VCH for realizing personal channel views. We will develop the prototype system to examine feasibility and design the user interface and operational metaphor on television and remote controller.

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References

[1] European Broadcasting Union. *Digital Video Broadcasting (DVB) Systems.* http://www.dvb.org/dvb_index.html.

[2] H. Fujiwara. *MPEG Textbook.* ASCII, 1995. (in Japanese).

[3] J. Rosengren. Electronic Programme Guides and Service Information. *Philips Journal of Research*, 50(1/2):253–265, 1996.

[4] R. Snodgrass. Temporal Databases. *IEEE Computer*, 19(9):35–42, 1986.

[5] Q. Qian, M. Tanizaki, and K. Tanaka. Abstraction and Inheritance of HyperLinks in an Object-Oriented Hypertext Database System TextLink/Gem. *IEICE transactions on Information and Systems*, E78-D(11):1343–1353, November 1995.

[6] D. F. Allen. Maintaining Knowledge about Temporal Intervals. *Communications of the ACM*, 26(11):832–843, 1983.

[7] T. Satou and M. Sakauchi. Video Acquisition on Live Hypermedia. In *proceedings of IEEE International Conference on Multimedia Computing and Systems(ICMCS '95)*, pages 175–181, May 1995.

[8] D. Terry, D. Goldberg, D. Nichols, and B. Oki. Continuous Queries over Append-Only Databases. In *proceedings of ACM SIGMOD Conference*, pages 321–330, June 1992.

View Images

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(54) METHOD AND APPARATUS FOR DISPLAYING TELEVISION PROGRAMS AND RELATED TEXT

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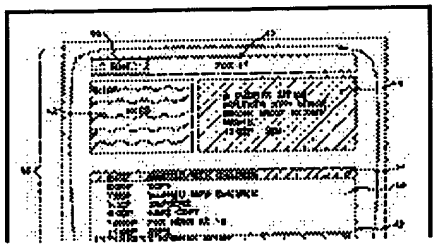
Abstract

A television system comprising an electronic program guide (EPG) (46) including a picture-in-picture (PIP) window (42) and a means for returning to a last channel viewed full screen in a television prior to entering the



full screen in a television prior to entering the guide. The EPG displays a program list (46) including a listing for the last channel displayed full screen (45).

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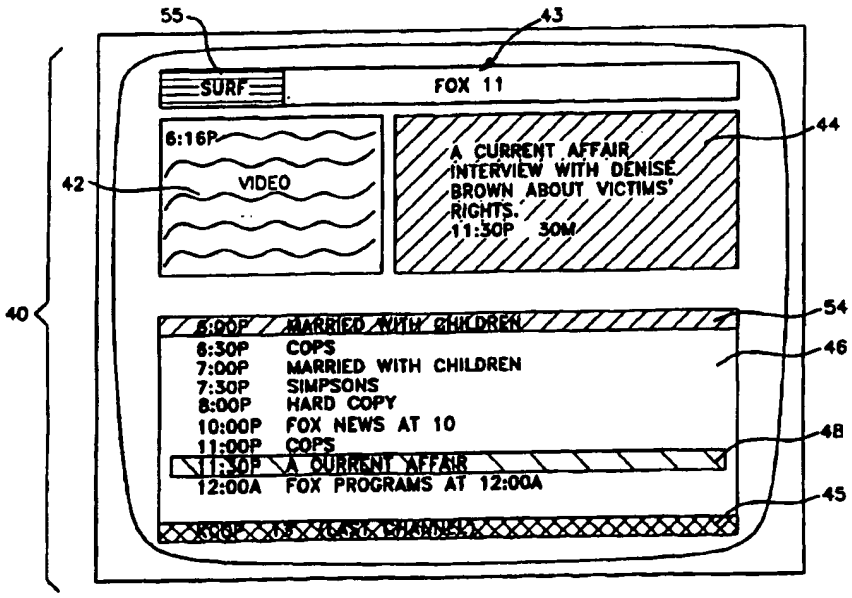


(57) Abstract

A television system comprising an electronic program guide (EPG) (46) including a picture-in-picture (PIP) window (42) and a means for returning to a last channel viewed full screen in a television prior to entering the guide. The EPG displays a program list (46) including a listing for the last channel displayed full screen (45).

METHOD AND APPARATUS FOR DISPLAYING TELEVISION PROGRAMS AND RELATED TEXT

Background of the Invention

This invention relates to the field of television and, more particularly, to a method and apparatus for switching between a television viewing mode and a program guide mode in which video programs and related text are displayed simultaneously on a television screen.

For a number of years television receivers have been equipped with picture-in-picture (PIP) capability. In PIP format, the moving, real time images of one television channel are displayed on the background of the screen and the moving, real time images of another television channel are displayed in a PIP window overlaid on a small area of the background. Because two channels are simultaneously displayed by the television receiver, two tuners are required. The viewer enters the PIP mode by pressing a PIP key of his or her controller. Then, the viewer can change either the channel of the background or the channel of the PIP by resetting the appropriate tuner. To reverse the background and PIP images, the viewer simply presses a SWAP key. To collapse the PIP window, the viewer again presses the PIP key.

Television program guides help television viewers select programs to watch. Such television program guides list the available television programs by day of the week, time of day, channel, and program title. For many years television program guides have been published in hard copy form. More recently, as illustrated by Levine Patent 4,908,713, television program guides have begun to take an electronic form. In other words, the schedule of program listings is stored in an electronic memory connected to the television receiver. The program listings are recalled from memory by the viewer on command for display on the television screen.

Despite the prevalence of television program guides, many viewers still make their program selections by switching the television tuner from channel to channel and observing on the screen what program is being received on the respective channels. This process is sometimes called "grazing."

Emanuel Patent 5,161,019 discloses an automated form of channel grazing. A preselected group of channels are sequentially scanned by switching the tuner of the television receiver from channel to channel. A still image of the program received on each channel is stored in a memory. After all the channels have been scanned, the still images from all the channels are simultaneously displayed on the television screen. This process gives the viewer more information about the program choices in addition to that obtainable from a television program guide, namely, the displayed still images of the actual programs.

Summary of the Invention

The present invention relates to a television system comprising in a guide mode an electronic program guide (EPG) which includes a PIP window for display of real time images and a last channel recall. The last channel recall provides the viewer means for returning from the guide mode to a last channel displayed full screen in a television viewing mode, or last channel full screen (LCF), prior to entering the guide mode. The EPG displays a vertically oriented program list which includes a listing for the LCF, and text identifying it as such. This last channel listing is positioned at the top of a program list area of an all channel guide. The viewer may return directly to the LCF in the television mode by setting a cursor in the all channel guide to the last channel listing immediately prior to exiting the guide mode.

The guide mode may include various types of guides. In guides which include listings for future programs, the last channel listing is positioned at a designated position of the program list area and remains in that position as the viewer scrolls through the other program listings in the program list. Preferably, this designated position is at the bottom of the program list area.

The system provides several options for returning to the LCF from the guide mode: the viewer may cursor to the last channel listing in the program list and then press a GUIDE/TV button; the viewer may designate the LCF as a default channel to which the system automatically tunes when exiting the guide mode; or the viewer may press a LAST CHANNEL button on the remote control unit to control the system to automatically exit the guide mode and simultaneously tune the system to the LCF.

In an alternate embodiment, the system employs two tuners, one for use in the television viewing mode and the other for use by a PIP chip in the guide mode. In the guide mode, the television tuner remains tuned to the LCF. Thus, when the viewer reselects the television viewing mode, the program being telecast on the LCF is displayed full screen.

Brief Description of the Drawings

These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings wherein:

FIG. 1 is a schematic block diagram of a television receiver that has an electronic television program guide incorporating the principles of one embodiment of the invention;

FIG. 2 is a television screen displaying a SURF guide formatted in accordance with the embodiment of FIG. 1;

FIG. 3 is a television screen displaying a NEXT guide formatted in accordance with another embodiment;

FIG. 4 is a television screen displaying a SCAN guide formatted in accordance with the embodiment of FIG. 3;

FIG. 5 is a television screen displaying a SORT guide formatted in accordance with the embodiment of FIG. 3;

FIG. 6 is a top plan view of a remote control unit for operating the electronic program guide; and

FIG. 7 is a schematic block diagram of yet another embodiment of the invention.

Detailed Description

This application is an improvement on application Serial Nos. 08/475,395, filed June 7, 1995 (Attorney Docket No. 27971), the disclosure of which is incorporated fully herein by reference, and International PCT Application No. US95/11173, filed August 31, 1995 (Attorney Docket No. 28354-PUT), the disclosure of which is also fully incorporated herein by reference.

The above-referenced applications each describe a television system including an electronic television program guide (EPG) in which the moving images of a television program are displayed in a PIP window on the screen of a television monitor and textual information related to the television program is displayed in the background on the screen. Preferably, the audio portion of the television program displayed in the PIP window is also reproduced by the sound system of the television monitor. The textual information is arranged on the screen so none of it is covered by the moving images.

In one embodiment, the textual, program-related information is a television program schedule. One of the program listings of the schedule identifies, by title and time and/or channel, the television program in the PIP window, which displays moving images.

To facilitate channel grazing, a television viewer can use a PIP format for display of current television program listings from a program schedule data base in the background and moving, real time images of a program selected from the displayed listings in the PIP window. Specifically, as the viewer selects a particular program from the displayed current television program listings by means of a cursor or a code number, the corresponding program automatically appears in the PIP window. In this way, the viewer can channel graze by sequentially selecting the individual program listings in the background. When the viewer finds a program that the viewer wishes to watch, the viewer leaves the PIP format and returns to full screen television viewing, the tuner already being set to the desired program. To do this the viewer can reverse the background and PIP window and then collapse the window, leaving the desired program on the full screen, or the apparatus can be configured to return to full screen viewing in a single step.

To permit the viewing of programs scheduled for future broadcast without losing sight of the current program being watched, a television viewer can use a PIP format for display of television program listings for a specific channel or a specific time from a program schedule data base in the background and moving, real time images of the current program on that channel in the PIP window. Specifically, as the viewer changes channels, the current program on that channel automatically appears in the PIP window. Alternatively, the programs scheduled for future broadcast can be formatted by category. The viewer can control the background to display program listings for a period of days, e.g., a week, in the future. In this way, the viewer can continue to watch a television program while ascertaining the future programs on the channel to which the television tuner is set. When the viewer finds a program that the viewer wishes to watch, the background disappears, leaving the program on the channel to which the tuner is set on the full screen.

In the course of switching from the television viewing mode to the guide mode, navigating through the various guides available in the guide mode, and channel grazing in the guides, the viewer may forget which channel he or she was watching prior to entering the guide mode. Accordingly, it is desirable to provide the viewer a simple means for returning to the last channel he or she was viewing before entering the guide mode without having to rely on his or her memory and without having to navigate through several guides in the guide mode in order to identify and access that channel when switching back to the television viewing mode. A television system according to the present invention provides the viewer with a last channel recall feature which allows the viewer to return to the last channel displayed full screen from the guide mode.

FIG. 1 is a schematic block diagram of a television receiver that has an EPG. This receiver is the same as that described in the above-referenced patent applications, including reference numerals, with the addition of a last channel register 34. Microprocessor 24 is programmed to execute the functions described below. Although last channel register 34 functionally is a separate component, it could be incorporated into the random access memory (RAM) of microprocessor 24, not shown. Similarly, cursor position register 32 and program schedule memory 22 could be resident in the RAM of microprocessor 24. When the receiver is in the television viewing mode, the channel to which tuner 11 is set is stored in register 34. Each time tuner 11 is set to a new channel, the last channel data in register 34 is updated. Ordinarily, only the national channel name or identification, e.g., CBS, HBO, CNN, is stored in register 34. A local channel number is retrieved from the channel map memory for display on the screen.

FIG. 2 is a television screen display that is a modification of the all channel guide for current time (NOW) shown in FIG. 8 of the above-referenced applications. The modification vis-a-vis the above-referenced applications is a last channel listing 45 at the top of program

schedule area 46, which is designated by the text "(Last Channel)". In banner 43, the designation "NOW" has been changed to "SURF", the designation "CHAN" has been changed to "NEXT", the designation "NEXT" has been changed to "SCAN", and the designation "SORT" remains the same. These and other modifications to the EPGs described in the above referenced applications are described in application Serial No. 08/744,399 filed on November 7, 1996 (Attorney Docket No. 29666), the disclosure of which is incorporated fully herein by reference.

In program schedule memory 22, the program listings are coded by day of the week, time of day, and channel so that they can be accessed by the microprocessor 24 when necessary to supply program schedule information to the video processor 30 to compose the program listings and the program descriptions. The microprocessor 24 has a real time clock (not shown), the time of which is compared with the time of day and day of the week codes to select the program listings for the SURF guide. The functional storage areas of the cursor position register 32 are mapped to the storage areas of the video processor 30 where the program schedule is formatted for display on background area 40 so the cursor position register 32 points to the area of the screen, and thus the particular program, that is highlighted by the cursor 48. At the same time, the microprocessor 24 operates the switch 18 so the output of the tuner 11 is directly connected to the one input of the PIP chip 19 and switches PIP chip 19 into a PIP mode, such that the input from the tuner 11 is displayed in PIP window 42 and the program schedule from the video processor 30 is displayed in background 40. The microprocessor 24 senses the channel to which the tuner is set when the SURF guide is entered, and initially positions the cursor 48 at the program listing broadcast on this channel. As the viewer moves the up/down arrows of the cursor control key set, the tuner 11 is reset accordingly and new program schedule information is fed through the microprocessor 24 to the video processor 30 to recompose the program listings so the cursor 48 remains visible and the program description remains current. By comparing the cursor position in the register 32 with the channel corresponding to the highlighted area of the video processor 30, the channel of the highlighted program is derived and coupled to the microprocessor 24. The microprocessor 24 then sets the tuner 11 to this channel. The described mode facilitates channel grazing by the viewer. When the viewer finds the video program he or she wishes to watch, the viewer leaves the EPG. As a result, the microprocessor 24 switches the PIP chip 19 out of the PIP mode, such that the video program inputted from the tuner 11 is displayed full screen.

Microprocessor 24 is configured to retrieve the data in last channel register 34 and to couple the retrieved data to video processor 30 to be incorporated into the formatted display shown in FIG. 2 as last channel listing 45 when the viewer enters the guide mode. It should be noted that it is not necessary to retrieve the associated title data because the program is simply

identified as "(Last Channel)". The listing for the same channel is also displayed in its regular order in the program listings with the title information.

According to a presently preferred embodiment, when entering the guide mode from the television viewing mode, the system automatically displays the SURF guide (FIG. 2). Microprocessor 24 is configured to position cursor 48 on last channel listing 45 and to display the program being broadcast on the last channel, i.e., "The Cosby Show" on KCOP 13, as the real time video image in PIP window 42. In operation, to display a different channel in PIP window 42, the viewer moves cursor 48 to a different entry in area 46. For example, to view "Married With Children" on FOX channel 11, cursor 48 highlights this entry and microprocessor 24 is configured to set tuner 11 to that channel.

While the system is in the guide mode, the data in last channel register 34 does not change. Microprocessor 24 is configured to set tuner 11 to the channel marked by cursor 48. When the viewer returns to the television viewing mode from the guide mode, the setting of the tuner 11 is not changed so the program last displayed in banner 43 is displayed full screen. Thus, if the viewer wishes to return to the channel that the viewer was last watching in the television viewing mode, the viewer moves cursor 48 to the top of area 46 to highlight last channel listing 45 and then automatically returns to the television viewing mode by pressing GUIDE/TV button 52 on a remote control unit 50, as shown in FIG. 6, which may function as viewer input device 28 (FIG 1). When the GUIDE/TV button is pressed, the channel data in register 34 is retrieved by microprocessor 24 and transmitted to tuner 11 to set tuner 11 to the last channel, e.g., KCOP 13 in the case illustrated in FIG 2. If the viewer instead wishes to watch a different channel upon return to the television viewing mode, the viewer moves cursor 48 to highlight the entry in area 46 that identifies the desired channel and then automatically returns to the television viewing mode by pressing the GUIDE/TV button. When the GUIDE/TV button is pressed this time, the channel data in video processor is retrieved by microprocessor 24 and transmitted to tuner 11 to set tuner 11 to the highlighted channel, e.g., FOX 11, in the case illustrated in FIG. 2.

The viewer may enter any of the other program guides for the SURF guide screen. The on-screen options are located in banner 43 and include a green NEXT prompt, a yellow SCAN prompt and a red SORT prompt. In FIG. 3, a version of a screen format for the NEXT guide is shown. All the program listings for the channel highlighted immediately before leaving the SURF guide, i.e., FOX Channel 11, are displayed in area 46, from the currently broadcast program into the future for a specified time period, e.g., 24 hours or until the end of the next day. This last channel highlighted before exiting the SURF guide is hereinafter referred to as the "last channel surfed" or "LCS". Area 46 has a column for time and a column for program title; each line of area 46 represents a separate program listing. The moving, real time images of the current television program on the channel are displayed in the PIP window 42. If the cursor also

highlights this program, a brief program description of that program is displayed in area 44. If the cursor highlights another program listing, as shown in FIG. 3, a brief program description of the highlighted program is displayed in area 44. The program being displayed on the LCS always remains displayed in the PIP window 42 as the viewer navigates through the SCAN guide. The viewer may return to the SURF guide by selecting the blue SURF prompt 55 in banner 43.

According to the presently preferred embodiment, only the SURF guide includes the last channel listing 45. In order to utilize the last channel feature, the viewer must return to the SURF guide and select last channel listing 45 with cursor 48 prior to exiting the guide mode.

In FIG. 4, a version of a screen format for the SCAN guide is shown. From this menu, the viewer can select the future time of the program listings to be displayed at intervals such as one-half hour. The selected future time, i.e., 8:00 p.m., for the program listings displayed in area 49 is shown in banner 43. A brief program description of the program listing highlighted in area 46 by the cursor 48 is displayed in area 44. The time slot of the SCAN guide can be incremented by one-half hour to 8:30 p.m. by selecting the red 8:30P prompt 59 in banner 43. Conversely, the viewer can scan back one-half hour to 7:30 p.m. by selecting the green 7:30P prompt 57 in banner 43. By way of example, if the television program schedule for 8:00 p.m. is currently displayed in area 46 and the viewer selects the green 7:30P prompt 57, the television program schedule for 7:30 p.m. will be displayed in area 46 and 7:30P will be displayed in sub-area 49 of banner 43. The green on-screen prompt 57 will change to 7:00P and the red on-screen prompt 59 will change to 8:00P so that the viewer has the option of scanning forward or backward in time by one-half hour with a single touch of the corresponding colored button on the remote control unit 50. Here also, the program being displayed on the LCS always remains displayed in the PIP window 42 as the viewer navigates through the SCAN guide. The viewer may return to the SURF guide by selecting the blue SURF prompt 55 in banner 43.

In FIG. 5, a version of a screen format for the "SORT" guide is shown. A list of various categories, i.e., movies, sports, variety, are displayed in area 46. Again, the program being displayed on the LCS always remains displayed in the PIP window 42 as the viewer navigates through the SCAN guide, and the viewer may return to the SURF guide by selecting the blue SURF prompt 55 in banner 43.

As shown in FIGs. 3 to 5, each of the NEXT, SCAN, and SORT guides include a program listing 54 for the current television program displayed in the PIP window 42, i.e., the program being displayed on the LCS. This listing is hereinafter referred to as the "PIP listing". Many times, a given program list will contain more program listings than may be displayed in area 46. Accordingly, only a portion of the program listings available in the guide will be displayed at one time, with "hidden" program listings being displayed as the viewer scrolls through the

program list. The PIP listing 54 is positioned on the top line of area 46 and remains at this position even as the viewer scrolls through the program listings available in the respective guide. Preferably, the PIP listing is on a background having a different color or shade than the cursor 48.

According to a presently preferred embodiment, GUIDE/TV button 52 on remote control unit 50 (FIG. 6) allows the viewer to toggle between the television viewing mode and the guide mode. Thus, the viewer may exit any of the guides by pressing the GUIDE/TV button. The program displayed in the PIP window 42 will be displayed full screen upon entering the television viewing mode, that is, the program currently being telecast on the LCS.

As described above, when entering each of the NEXT (FIG. 3), SCAN (FIG. 4), and SORT (FIG. 5) guides from the SURF guide (FIG. 2), the tuner 11 remains set to the LCS, so that the moving real time images of the television program viewed from the SURF guide remains in the PIP window 42 for uninterrupted viewing. Also, in each of these guides, the PIP listing 54 is displayed at the top of area 46. In an alternate embodiment according to the present invention, area 46 may include the last channel listing 45, providing the viewer with the last channel recall feature in any of these guides. This channel is hereinafter referred to as the last channel full screen or "LCF". As in the SURF guide, the text designating the LCF in the last channel listing 45 is "(Last Channel)".

It is desirable to position the PIP listing 54 at the top of area 46 to clearly identify which program is being displayed. It is also desirable to display the last channel listing 45 in a fixed position in area 46 separate from the other program listings. According to one embodiment, area 46 in each of the NEXT, SCAN, and SORT guides is arranged such that PIP listing 54 is at the top of area 46 and last channel listing 45 is at the bottom of the list. These listings remain in their designated positions even as the viewer scrolls through the other program listings in the respective guide. Preferably, the last channel listing 45 is highlighted a different color or shade than the cursor 48 or the PIP listing 54. The last channel listing is generated in the same manner as described above for the SURF mode. The viewer may cursor to any listing in area 46 including the PIP listing 54 and the last channel listing 45.

In one embodiment, the tuner remains tuned to the LCS in the NEXT, SCAN, and SORT guides regardless of which listing is selected with the cursor. Therefore, in these guides, the program being displayed in the PIP window 42 does not change. In this embodiment, to utilize the last channel recall feature, the viewer pushes the GUIDE/TV button to exit the guide mode while the cursor is positioned on the last channel listing 45, which controls the microprocessor to retrieve the channel designation for the LCF from the last channel register 34 and to control the tuner to tune the LCF. Hence, the program being telecast on the LCF is displayed full screen upon returning to the television viewing mode. However, if any other listing is selected at the

time the viewer exits the guide mode, the tuner will remain tuned to the LCS, and the program displayed in the PIP window prior to exiting the guide mode will be displayed full screen in the television viewing mode. Hence, the LCS is the default channel when switching to the television viewing mode. In an alternate embodiment, the default channel may be designated as either the LCS or LCF by the viewer during system set-up.

In another alternate embodiment, the viewer may toggle between the programs telecast on the LCS and LCF in the PIP window 42. According to this embodiment, while in the NEXT, SCAN, or SORT guides, the microprocessor 24 controls the tuner 11 to tune the LCF when the cursor is set to last channel listing 45 so that the television program on the LCS displayed in PIP window 42 is replaced by the program last displayed full screen. The tuner will remain tuned to the LCF until the PIP listing 54 is selected. This affords the viewer the option of toggling between the program being telecast on the last channel he or she selected before entering the guide mode and the last channel he or she selected while channel grazing in the SURF guide mode. Preferably, the colors of the PIP listing 54 and last channel listing 45 highlighting are exchanged, but their respective positions in area 46 are not.

According to yet another embodiment of the present invention, returning to the LCF in the television viewing mode from any guide is facilitated by the inclusion of a LAST CHANNEL button 60 on remote control unit 50. In a television viewing mode, a last channel button is commonly used to toggle between a currently tuned channel and previously tuned channel. According to the present invention, the LAST CHANNEL button 60 may also be used to return to the television viewing mode from any guide, i.e., SURF, NEXT, SCAN, or SORT, while simultaneously tuning the tuner 11 to the LCF. The viewer thus has two viewing options when exiting the guide mode, either pressing the LAST CHANNEL button to return to the LCF in the television viewing mode, or pressing the GUIDE/TV button to return to the LCS in the television viewing mode.

In the embodiments described above, the microprocessor 24 controls a single tuner 11 to display a program in both the television viewing mode and the guide mode, and the LCF is stored in a memory such as a RAM connected to the microprocessor. FIG. 7 is a schematic block diagram of a television system according to the present invention utilizing two tuners to provide last channel recall feature. According to this embodiment, the LCF is stored in a television tuner 72 which tunes channels in the television viewing mode. Depending on they type of tuner employed, the LCF may be stored in television tuner 72 mechanically or in the phase-locked loop of the tuner. In the guide mode, a separate PIP tuner 74 tunes channels for display in the PIP widow and the television tuner 72 remains tuned to the LCF. Since the television tuner remains tuned to the LCF, upon return to the television mode from the guide mode, the program being telecast on the LCF is automatically displayed full screen.

Although certain preferred embodiments of the present invention have been described herein, many modifications and variations will be apparent to those skilled in the art. It is therefore to be understood that the scope of the invention should be limited only by the appended claims.

WHAT IS CLAIMED IS:

1. A method of channel surfing with television apparatus having a screen and a tuner for selecting the channel displayed on the screen, the method comprising the steps of:

storing in a listings memory a plurality of television program listings representing telecast programs, each stored program listing including an associated channel designation;

setting the tuner to receive a selected channel;

displaying in a television viewing mode a selected program being telecast on the selected channel full screen;

selecting a program guide mode;

storing in a channel memory the designation for the selected channel;

generating a last channel listing from the selected channel designation in the channel memory;

in a program guide mode displaying in a first area of the screen the program telecast on the selected channel; and

in the program guide mode simultaneously displaying in a second area of the screen a graphical display comprising:

a program list including some of the program listings stored in the listings memory; and

the last channel listing in a designated position of the program list.

2. The method of claim 1 wherein the designated position is at the top of the program list.

3. A method of channel surfing with television apparatus having a screen and a tuner for selecting the channel displayed on the screen, the method comprising the steps of:

storing in a listings memory a plurality of television program listings representing telecast programs, each stored program listing including an associated channel designation;

setting the tuner to receive a selected channel;

displaying in a television viewing mode a selected program being telecast on the selected channel full screen;

selecting a program guide mode;

storing in a channel memory the designation for the selected channel;

generating a last channel listing from the selected channel designation in the channel memory;

in a program guide mode displaying in a first area of the screen the program telecast on the selected channel; and

in the program guide mode simultaneously displaying in a second area of the screen a graphical display comprising:

a program list area including some of the program listings stored in the listings memory; and

the last channel listing in a designated position of the program list area.

4. The method of claim 3 wherein the designated position for the last channel listing is at the bottom of the program list area.

5. The method of claim 3 further comprising the step of:

in the program guide mode scrolling through a plurality of the program listings while maintaining the last channel listing in the designated position of the program list area.

6. The method of claim 3 wherein the last channel listing is marked by highlighting.

7. A method of channel surfing with television apparatus having a screen and a tuner for selecting the channel displayed on the screen, the method comprising the steps of:

storing in a listings memory a plurality of television program listings representing telecast programs, each stored program listing including an associated channel designation;

setting the tuner to receive a selected channel;

displaying in a television viewing mode a selected program being telecast on the selected channel full screen;

selecting a program guide mode;

storing in a channel memory the designation for the selected channel;

generating a last channel listing from the selected channel designation in the channel memory;

in a program guide mode displaying in a first area of the screen the program telecast on the selected channel;

in the program guide mode simultaneously displaying in a second area of the screen a graphical display comprising a program list including some of the program listings stored in the memory and the last channel listing; and

in the program guide mode continually marking on the screen the last channel listing while the program guide mode is selected.

8. The method of claim 6 wherein the last channel listing is marked by text which identifies the selected channel as the last channel displayed full screen.

9. The method of claim 6 wherein the last channel listing is marked by highlighting.

10. A method of channel surfing with television apparatus having a screen and a tuner for selecting the channel displayed on the screen, the method comprising the steps of:

storing in a listings memory a plurality of television program listings representing telecast programs, each stored program listing including an associated channel designation;

setting the tuner to receive the program telecast on a first selected channel;

displaying in a television viewing mode a first selected program being telecast on the first selected channel full screen;

selecting a program guide mode;

storing in a channel memory a designation for the first selected channel;

generating a last channel listing from the selected channel designation in the channel memory;

in a program guide mode displaying in a first area of the screen the program telecast on the first selected channel;

in the program guide mode simultaneously displaying in a second area of the screen some of the program listings stored in the listings memory, including the last channel listing;

in the program guide mode marking on the screen with a cursor the last channel listing;

moving the cursor to highlight a listing for a second selected program displayed in the second area;

retrieving the selected channel designation of the second selected program listing from memory;

setting the tuner to the retrieved channel designation to display the second selected program telecast on the second selected channel in the first area;

selecting the television viewing mode;

retrieving the designation for the first selected channel from channel memory;

setting the tuner to the retrieved first selected channel; and

switching from the program guide mode to the television viewing mode without changing the tuner so that the program telecast on the first selected channel is displayed full screen in the television viewing mode.

11. A method of channel surfing with television apparatus having a screen and a first tuner for selecting the channel displayed on the screen in a television viewing mode and a second tuner for selecting the channel displayed in a PIP window in a guide mode, the method comprising the steps of:

storing in a listings memory a plurality of television program listings representing telecast programs, each stored program listing including an associated channel designation;

setting the first tuner to receive the program telecast on a first selected channel;

displaying in the television viewing mode a first selected program being telecast on the first selected channel full screen;

selecting the program guide mode;

in the program guide mode displaying in a first area of the screen the program telecast on the first selected channel;

in the program guide mode simultaneously displaying in a second area of the screen some of the program listings stored in the listings memory;

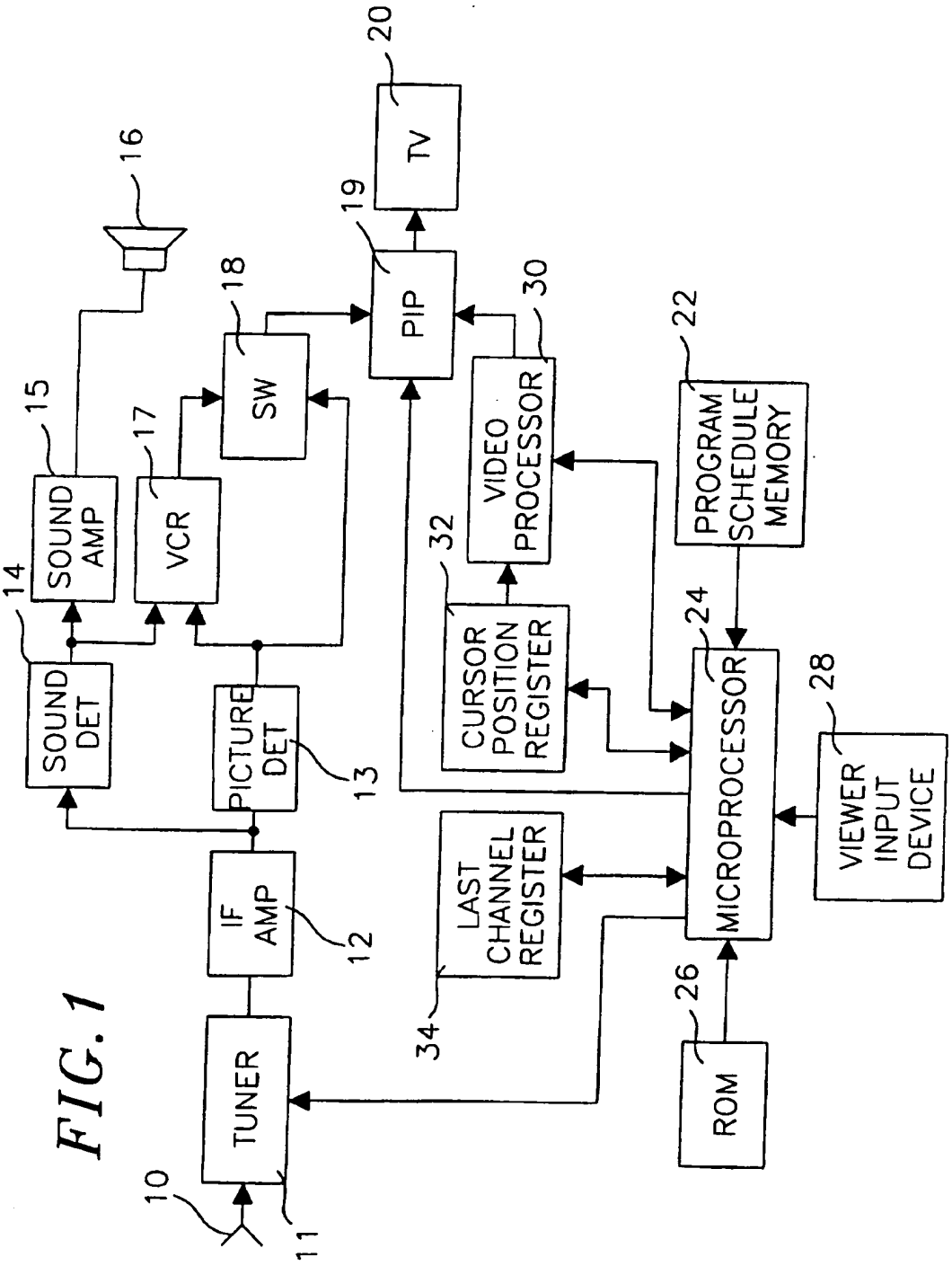
moving the cursor to highlight a listing for a second selected program displayed in the second area;

retrieving the selected channel designation of the second selected program listing from memory;

setting the second tuner to the retrieved channel designation to display the second selected program telecast on the second selected channel in the first area;

selecting the television viewing mode; and

switching from the guide mode to the television viewing mode while simultaneously switching tuners so that the program telecast on the first selected channel is displayed full screen in the television viewing mode.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PIP
TV
VIDEO PROCESSOR
CURSOR POSITION REGISTER
LAST CHANNEL REGISTER
MICROPROCESSOR
ROM
PROGRAM SCHEDULE MEMORY
VIEWER INPUT DEVICE
10
11
12
13
14
15
16
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28
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32
34

FIG. 1

FIG. 2

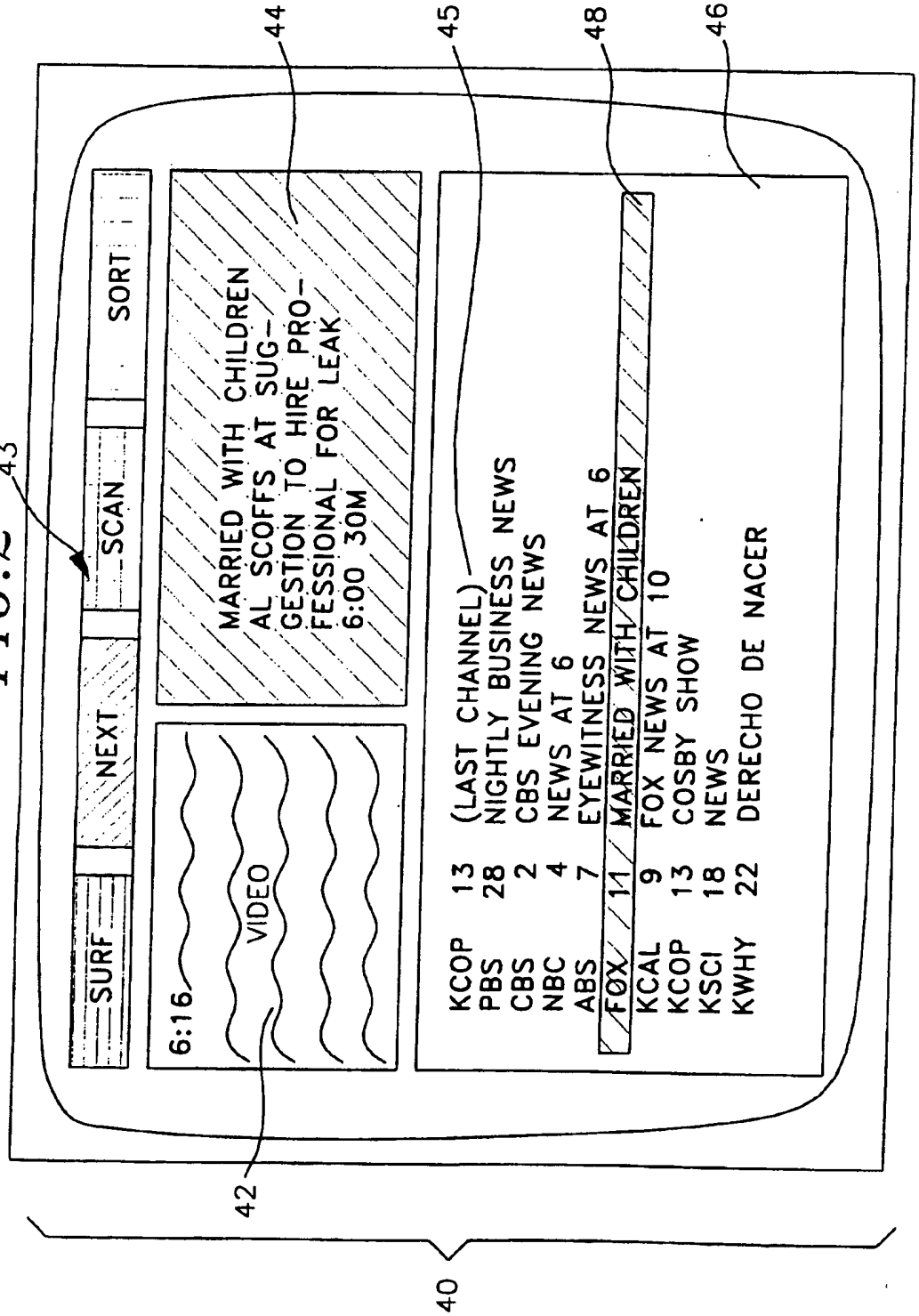

43
44
45
48
46
SURF
NEXT
SCAN
SORT
6:16
VIDEO
MARRIED WITH CHILDREN
AL SCOFFS AT SUG-
GESTION TO HIRE PRO-
FESSIONAL FOR LEAK
6:00 30M
KCOP 13 (LAST CHANNEL)
PBS 28 NIGHTLY BUSINESS NEWS
CBS 2 CBS EVENING NEWS
NBC 4 NEWS AT 6
ABS 7 EYEWITNESS NEWS AT 6
FOX 11 MARRIED WITH CHILDREN
KCAL 9 FOX NEWS AT 10
KCOP 13 COSBY SHOW
KSCI 18 NEWS
KWHY 22 DERECHO DE NACER
42
40

FIG. 3

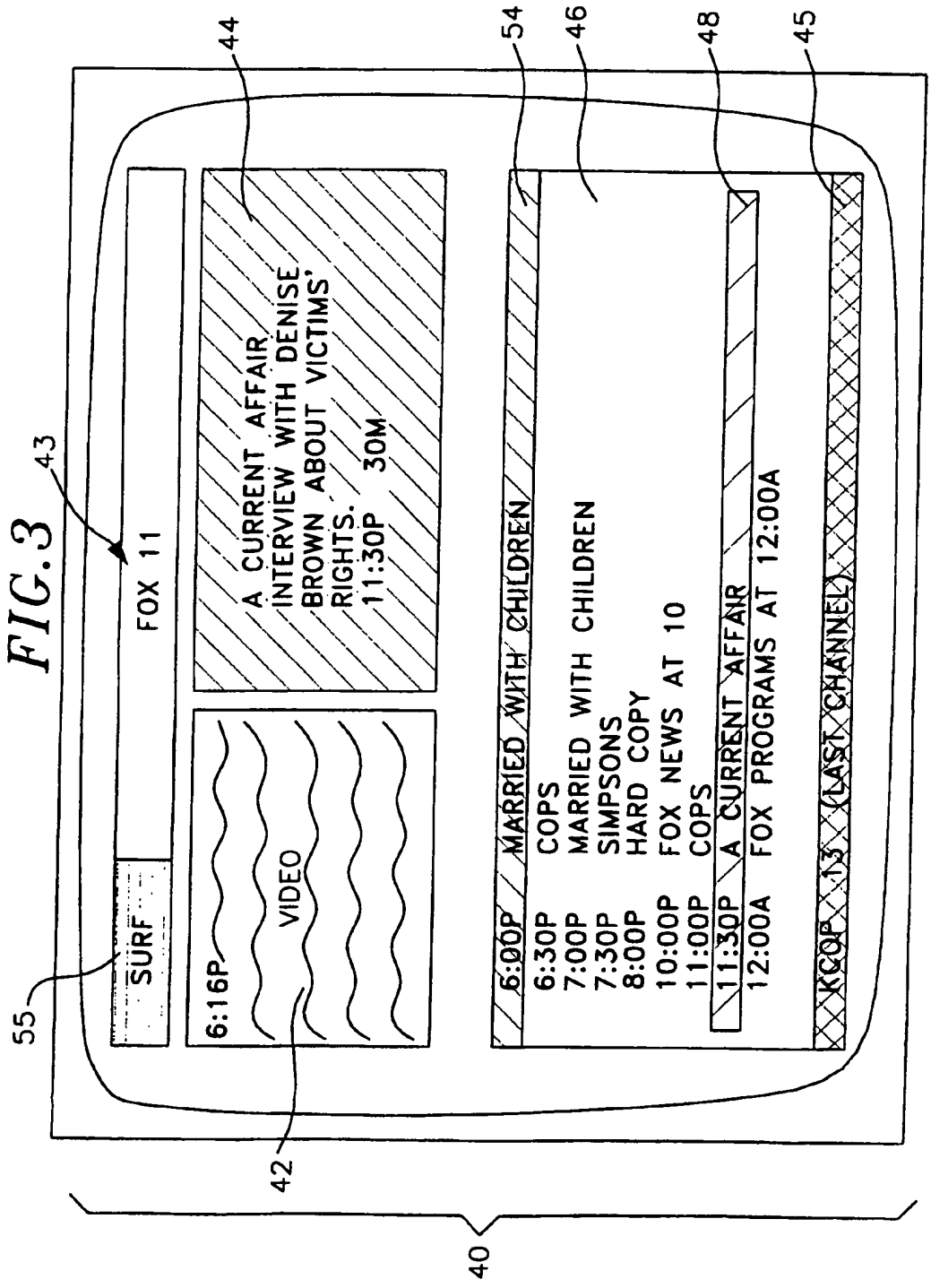

40
42
55
SURF
FOX 11
43
6:16P
VIDEO
A CURRENT AFFAIR
INTERVIEW WITH DENISE
BROWN ABOUT VICTIMS'
RIGHTS. 11:30P 30M
44
6:00P MARRIED WITH CHILDREN
6:30P COPS
7:00P MARRIED WITH CHILDREN
7:30P SIMPSONS
8:00P HARD COPY
10:00P FOX NEWS AT 10
11:00P COPS
11:30P A CURRENT AFFAIR
12:00A FOX PROGRAMS AT 12:00A
54
46
48
KCOP 13 (LAST CHANNEL)
45

FIG. 4

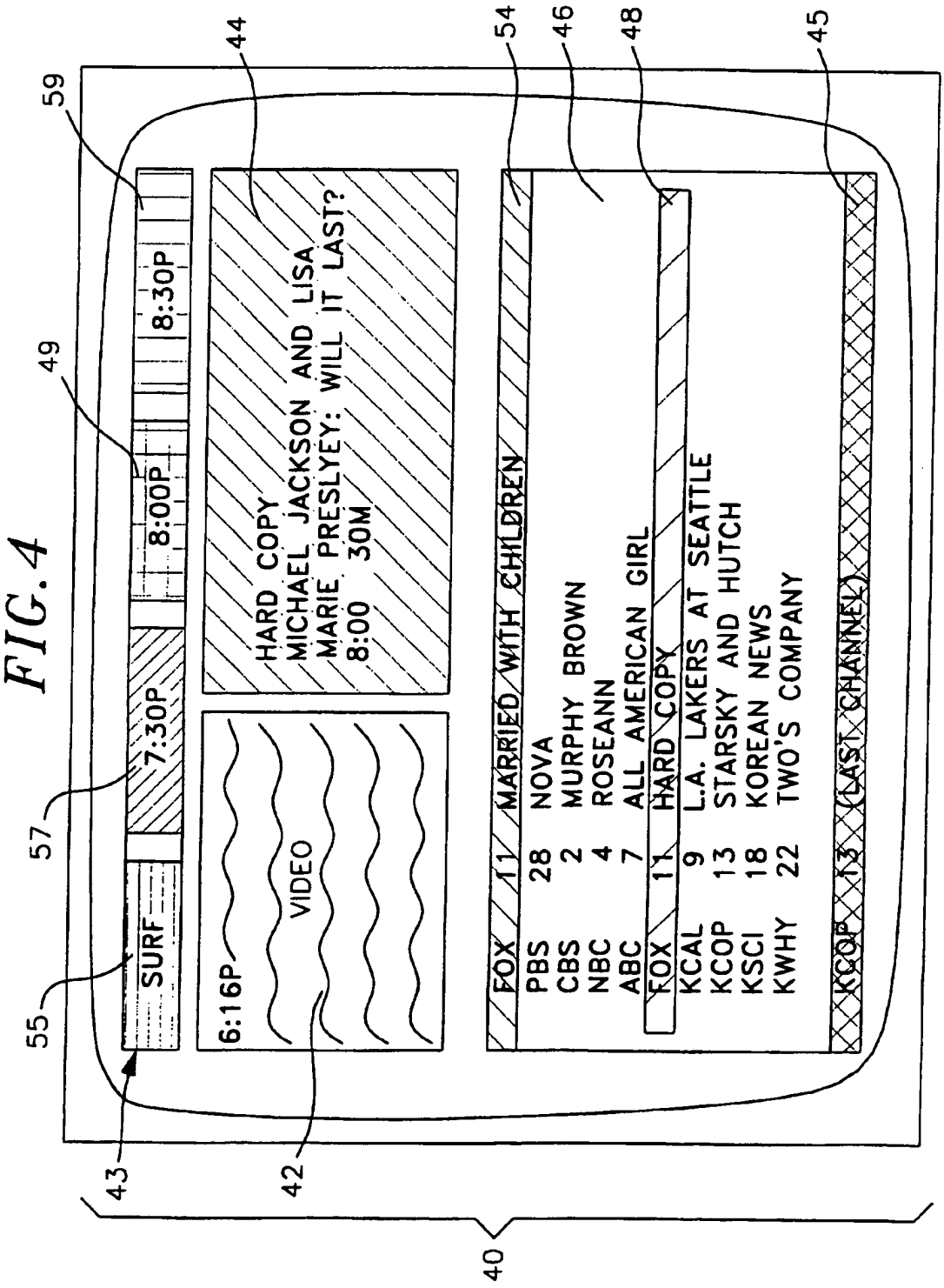

40
43
42
55
57
49
59
44
54
46
48
45
SURF
7:30P
8:00P
8:30P
6:16P
VIDEO
HARD COPY
MICHAEL JACKSON AND LISA
MARIE PRESLYEY: WILL IT LAST?
8:00 30M
FOX 11 MARRIED WITH CHILDREN
PBS 28 NOVA
CBS 2 MURPHY BROWN
NBC 4 ROSEANN
ABC 7 ALL AMERICAN GIRL
FOX 11 HARD COPY
KCAL 9 L.A. LAKERS AT SEATTLE
KCOP 13 STARSKY AND HUTCH
KSCI 18 KOREAN NEWS
KWHY 22 TWO'S COMPANY
KCOP 13 (LAST CHANNEL)

FIG. 5

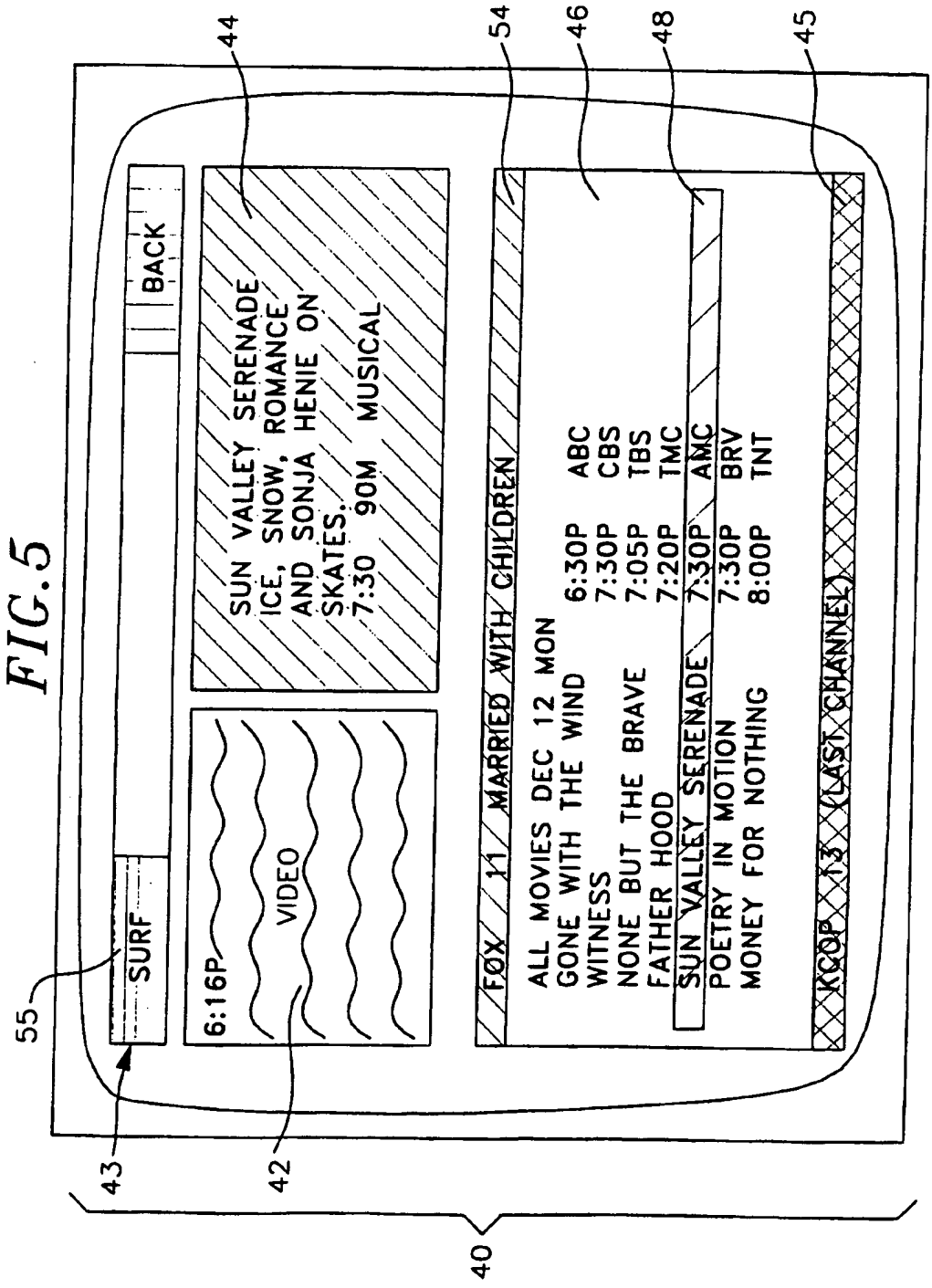
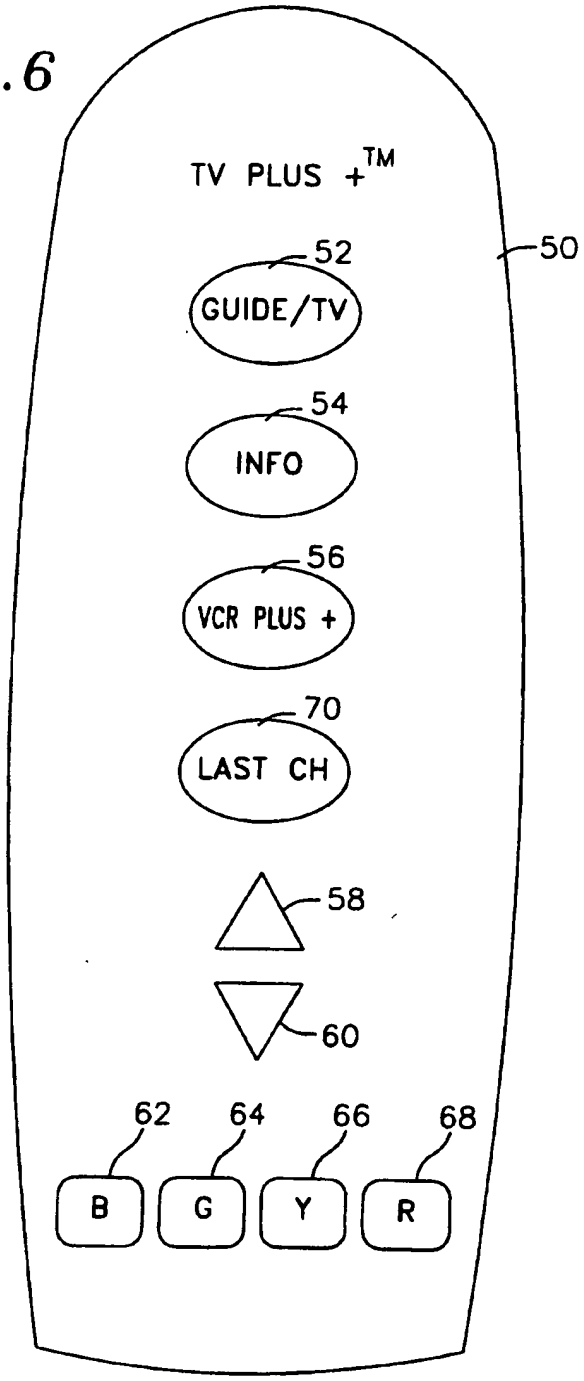

BACK
SURF
6:16P
VIDEO
SUN VALLEY SERENADE
ICE, SNOW, ROMANCE
AND SONJA HENIE ON
SKATES.
7:30 90M MUSICAL
FOX 11 MARRIED WITH CHILDREN
ALL MOVIES DEC 12 MON
GONE WITH THE WIND 6:30P ABC
WITNESS 7:30P CBS
NONE BUT THE BRAVE 7:05P TBS
FATHER HOOD 7:20P TMC
SUN VALLEY SERENADE 7:30P AMC
POETRY IN MOTION 7:30P BRV
MONEY FOR NOTHING 8:00P TNT
KCOP 13 (LAST CHANNEL)
44
54
46
48
45
55
43
42
40

FIG. 6


TV PLUS +™
50
52
GUIDE/TV
54
INFO
56
VCR PLUS +
70
LAST CH
58
60
62
64
66
68
B
G
Y
R

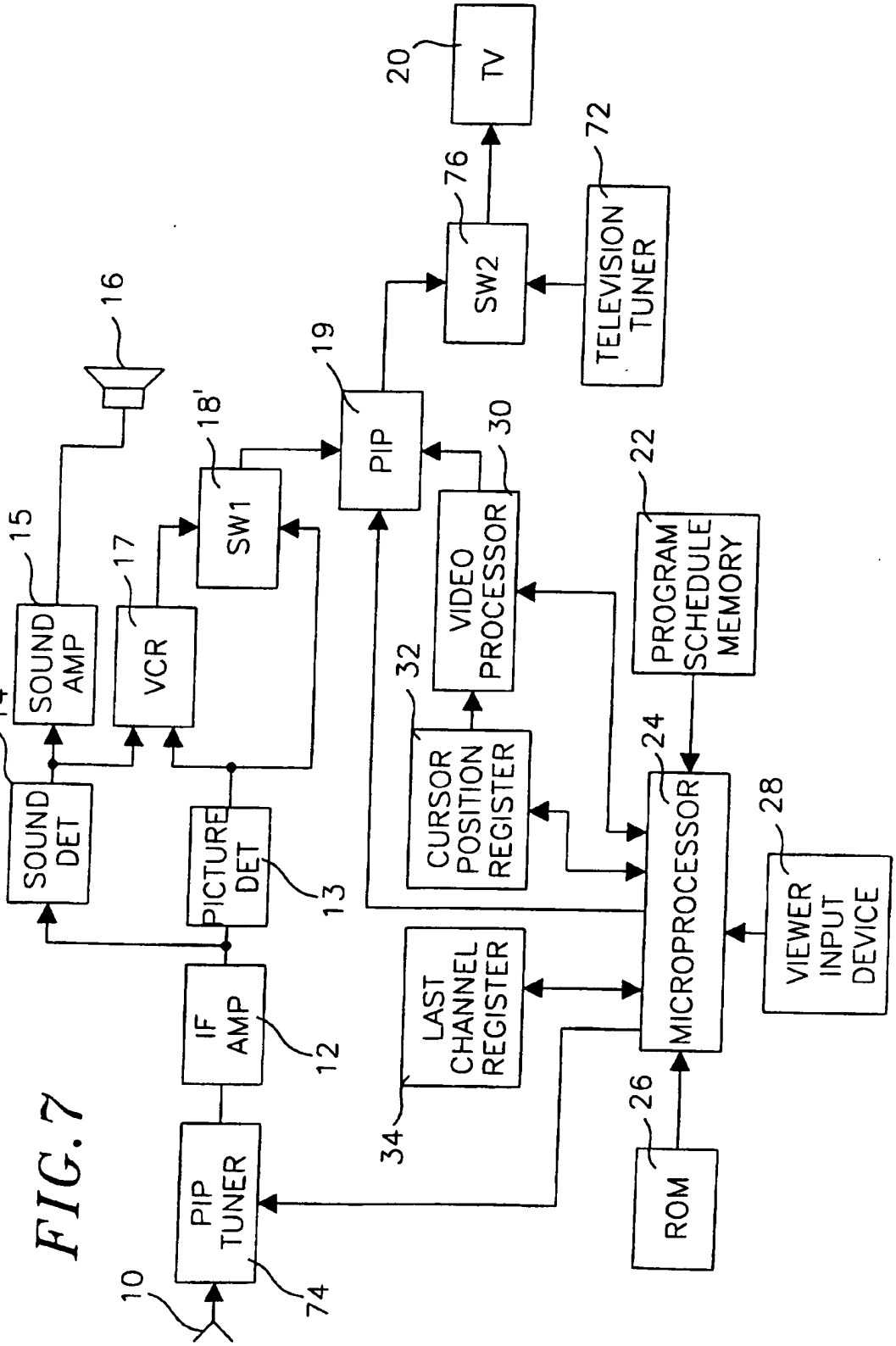

10
PIP TUNER
74
IF AMP
12
SOUND DET
14
PICTURE DET
13
SOUND AMP
15
VCR
17
SW1
18'
16
PIP
19
SW2
76
TV
20
TELEVISION TUNER
72
VIDEO PROCESSOR
30
CURSOR POSITION REGISTER
32
LAST CHANNEL REGISTER
34
PROGRAM SCHEDULE MEMORY
22
MICROPROCESSOR
24
ROM
26
VIEWER INPUT DEVICE
28

FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/04233

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04N 5/455, 5/ 45, 7/173
US CL :348/565, 563, 906
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/565, 563, 906, 564, 566, 569, 570, 731, 732, 6, 7, 12, 10, 13; 455/ 4.1, 4.2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,479,268 A (YOUNG ET AL.) 26 DECEMBER 1995, FIGURES 1-3, 5 AND 7.	1-11
Y,P	US 5,585,838 A (LAWLER ET AL.) 17 DECEMBER 1996, FIGURES 3, 6 AND 8.	1-11
Y,P	US 5,528,304 A (CHERRICK ET AL.) 18 JUNE 1996, FIGURES 1 AND 7.	1-11

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
03 JUNE 1997	11 JUL 1997
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer NATHAN J. FLYNN Telephone No. (703) 308-6601

Form PCT/ISA/210 (second sheet)(July 1992)*

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. ..al Application No
PCT/US 97/09703

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9414282 A		WO 9414284 A	23-06-94
		US 5559549 A	24-09-96
		US 5600364 A	04-02-97
		US 5659350 A	19-08-97